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BY

C. GORDON BRO

LATE SENIOR DEMONSTRATOR OF ANATOMY, MIDDL
ASSISTANT SURGEON NORTH-WEST

WITH PLATES DRAWN AND LI

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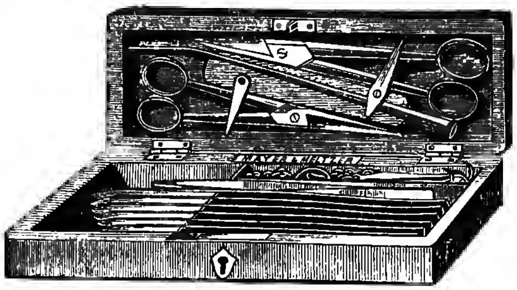

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HUMAN ANATOMY

BY

C. GORDON BRODIE, F.R.C.S.

LATE SENIOR DEMONSTRATOR OF ANATOMY, MIDDLESEX HOSPITAL MEDICAL SCHOOL
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PREFACE

In the third series of dissections the objects stated in the first two portions have been kept steadily in view, and it is hoped that they will compare favourably with them in every way. The diagrams are drawn to a larger scale, and thus have been rendered clearer. In the description of the anterior triangle, that given in Gray has been taken as the standard, although, if the boundaries of the triangle as given are adhered to, the carotid sheaths, &c., must be excluded; for they really lie under the sterno-mastoid in relation with its deep surface, and are only described as 'contents' for the sake of convenience.

I tried very hard to obtain material for a fresh dissection of the brain, and also to make a new sagittal section; but it was impossible to get a subject fresh enough to harden—all those that entered the mortuary having been dead far too long to be satisfactory.

The author again wishes to thank Mr. Highley for the care taken in drawing the plates and transferring them to stone; and also Mr. Dobbin and Mr. A. G. Noble in aiding some of the dissections, and Dr. Guthrie for reading over and criticising the proof-sheets.

C. Gordon Brodie.

30 Harley Street, Cavendish Square, W.
August 31, 1894.

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Plate XXXIX. The Anterior Triangle, superficial view.
Plate XL. The Anterior Triangle, with edge of Sterno-mastoid turned back.
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Plate XLII. The Suboccipital Triangle.
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Plate XLVII. Pterygoid Region, deep view; Side of Neck, Gasserian Ganglion, and Muscles of Tongue.
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Plate LIV. Thorax, anterior view.
Plate LV. Thorax, second anterior view.
Plate LVI. Thorax, Posterior Mediastinum from behind.
Plate LVII. Fœtal Thorax, Thymus and Front of Neck

PLATE XXXVIII.

THE POSTERIOR TRIANGLE.

This plate shows a dissection of the posterior triangle of the neck after removal of the cervical fascia which roofs it in, and the dense fibro-fatty tissue it contains. The upper portion of the triangle is that which needs most care, as the connective tissue is extremely tough and fibrous.

The **Posterior triangle** is bounded—

In front.—By the posterior edge of the sterno-mastoid.

Behind.—By the anterior edge of the trapezius.

Below.—By the middle third of the clavicle.

The Floor is formed from above downward by the splenius, levator anguli scapulæ, scalenus medius and posticus, and the first serration of the serratus magnus appears in the lower and outer portion of the triangle when the arm is strongly depressed.

It is divided into two triangles by the omo-hyoid muscle, which crosses its lower part obliquely, an upper and larger, the occipital, and a lower and smaller—the subclavian, the size of which varies as the omo-hyoid crosses higher or lower above the clavicle.

The *Occipital* triangle contains—

The cervical plexus, and its small occipital, great auricular, superficial cervical, descending or supra-clavicular branches, muscular branches to the levator anguli scapulæ, communicating branches to the spinal accessory (those from the third and fourth also supplying the trapezius), the spinal accessory, upper cords of the brachial plexus, nerve to the rhomboids, and nerve to the subclavius, the supra-scapular and origin of the posterior thoracic.

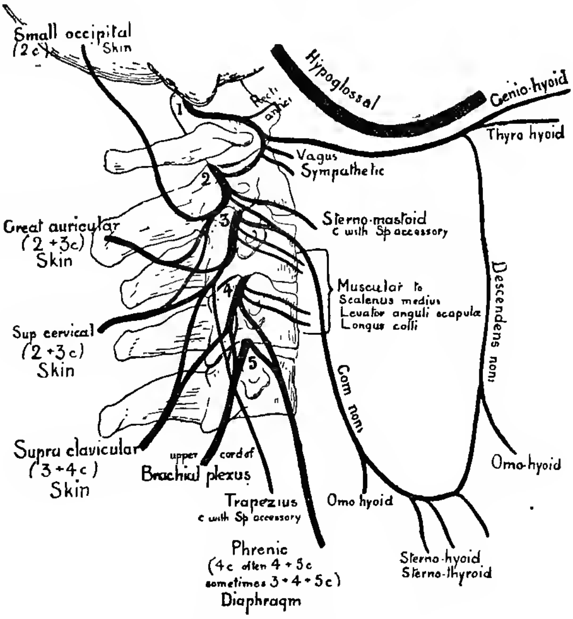

Diagram of the Cervical Plexus

The transverse cervical, superficial ascending cervical and posterior scapular artery and veins, posterior jugular vein.

The glandulæ concatenatæ along the posterior edge of sterno-mastoid.

The *Subclavian* triangle contains—

The subclavian artery (third part), the transverse cervical and supra-scapular vessels, the end of the external and posterior jugular veins. The cords of the brachial plexus, supra-scapular and posterior thoracic nerves and nerve to the subclavius muscle.

PLATE XXXVIII.

MUSCLES

A Sterno-mastoid, its sternal origin.
A′ Sterno-mastoid, its clavicular origin.
B Platysma.
C Splenius.
D Levator anguli scapulæ.
E Scalenus anticus.
F Scalenus medius.
G Omo-hyoid, its posterior belly.
H Trapezius.

VESSELS

a Subclavian artery.
b External jugular vein.
c Supra-scapular artery and vein.
d Posterior scapular artery and vein.
e Transverse cervical artery and vein.
f Superficial ascending twig from transverse cervical.
g Ascending cervical.
h A muscular twig from ascending cervical.

NERVES

1 Small occipital.
2 Great auricular.*
3 Superficial cervical.
4 Spinal accessory.
5 Communicating from third cervical to spinal accessory.
6 Branch from fourth cervical to trapezius communicating with spinal accessory.
7 Supra-clavicular or descending branches of cervical plexus dividing into—
8 Acromial,
9 Clavicular, and
10 Sternal branches.
11 Nerve to levator anguli scapulæ.
12 Nerve to rhomboids, sending also a twig to levator.
13 Supra-scapular nerve.
14 Posterior thoracic.
15 Twig from posterior thoracic to first serration of serratus magnus.
16 Nerve to subclavius.
17 Phrenic nerve.
18 Cords of brachial plexus; the figure is placed on the fifth cervical.

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* 2′ is a large auricular branch from the small occipital, which took the place of the mastoid branch of the great auricular.

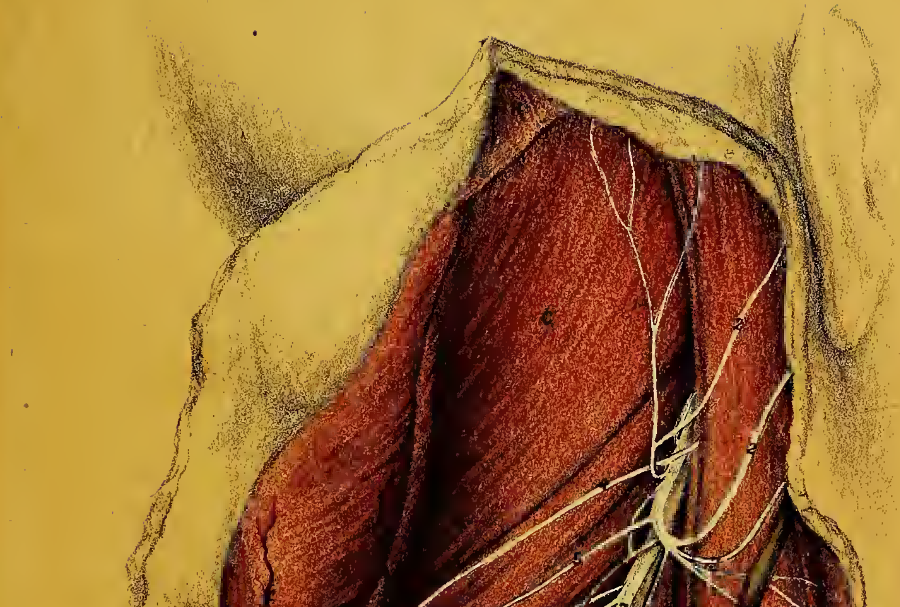

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PLATE XXXIX.

ANTERIOR TRIANGLE, SUPERFICIAL VIEW.

In this dissection, after the skin was removed, the platysma was cut across, and its upper portion turned over the jaw. The cervical fascia and the superficial lymphatic glands lying in the submaxillary triangle were removed and the space cleaned of fat.

The following diagram has been introduced to show a plan of the superficial veins of the neck: (*a*) Temporal; (*b*) internal maxillary; (*c*) posterior auricular; (*d*) anterior branch of temporo-maxillary going to join the facial; (*e*) external jugular formed by the junction of the posterior auricular and posterior branch of the temporo-maxillary; (*f*) posterior external jugular, which usually receives the mastoid vein from the lateral sinus; (*g*) placed between the transverse cervical and the supra-scapular veins; (*h*) facial; (*i*) submental; (*k*) anterior jugular; (*l*) lingual; (*m*) superior thyroid; (*n*) middle thyroid; (*o*) internal jugular; (*p*) subclavian; (*r*) jugulo-cephalic; (*s*) deep facial which communicates with the pterygoid plexus, this plexus receives a vein through the foramen Vesalii from the cavernous sinus; (*t*) communication between the angular vein and the ophthalmic (which flows into the cavernous sinus).

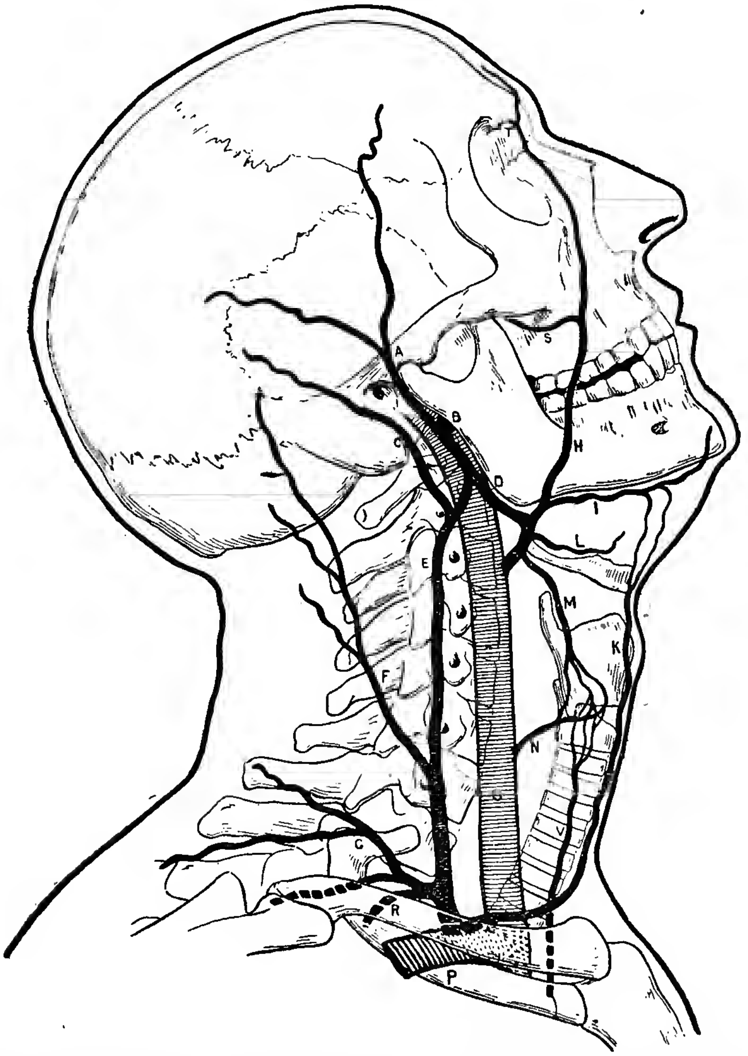

PLATE XXXIX.

MUSCLES

A	Sterno-mastoid.
A′	Its separate sternal origin.
B	Sterno-hyoid.
C	Sterno-thyroid.
D	Thyro-hyoid.
E	Omo-hyoid.
E′	Tendon of omo-hyoid.
F	Hyoglossus.
G	Stylo-hyoid.
H	Digastric.
I	Thyro-hyoid membrane.
K	Supra-hyoid aponeurosis, tying the tendon of digastric to hyoid bone.
L	Mylo-hyoid.
M	Masseter.
N	Platysma.
O	Parotid gland.
P	Submaxillary gland.
R	Retrahens aurem.
S	Mastoid process.
T	Pectoralis major.
V	Clavicle.

VESSELS

a	Facial artery.
b	Submental branch of facial.
c	Posterior auricular artery.
d	External jugular vein.
e	Anterior division of the temporo-maxillary vein joining facial.
f	Facial vein.
g	Anterior jugular vein.
h	Submental vein which forms a junction with the anterior jugular.

NERVES

1	Superficialis colli.
2	Its communication with the facial.
3	Great auricular.
4	Infra-mandibular branch of facial.
5	Mylo-hyoid branch of inferior dental.
6	Posterior auricular branch of the facial.
7	Hypoglossal.
8	Thyro-hyoid branch of the hypoglossal.
9	Branch from the descendens noni (cervicis) to the sterno-hyoid.

In this plate great care was taken to keep the anterior edge of the sterno-mastoid as nearly in its normal position as it was possible.

To mark out the course of the external jugular vein draw a line from the angle of the jaw to the middle of the clavicle; the vein runs deep to and parallel with the fibres of the platysma muscle, thus in venesection the incision must be made transversely to the course of the vein, so that the muscle fibres may gape and expose it.

The posterior external jugular, very variable in size, is the remains of an important fœtal vein which drained the blood from the lateral sinus through the post-glenoid foramen. This persists in the adult as the mastoid vein which communicates with the lateral sinus and empties externally into the posterior external jugular. (Professor Macalister considers this the true external jugular.)

The anterior jugular is very variable in size, and its communication across the front of the neck with the one on the opposite side must be borne in mind during tracheotomy, as it is often much congested. In the lower part of its course under the sterno-mastoid it runs parallel to the clavicle, and in tenotomy of the muscle for torticollis this should be remembered.

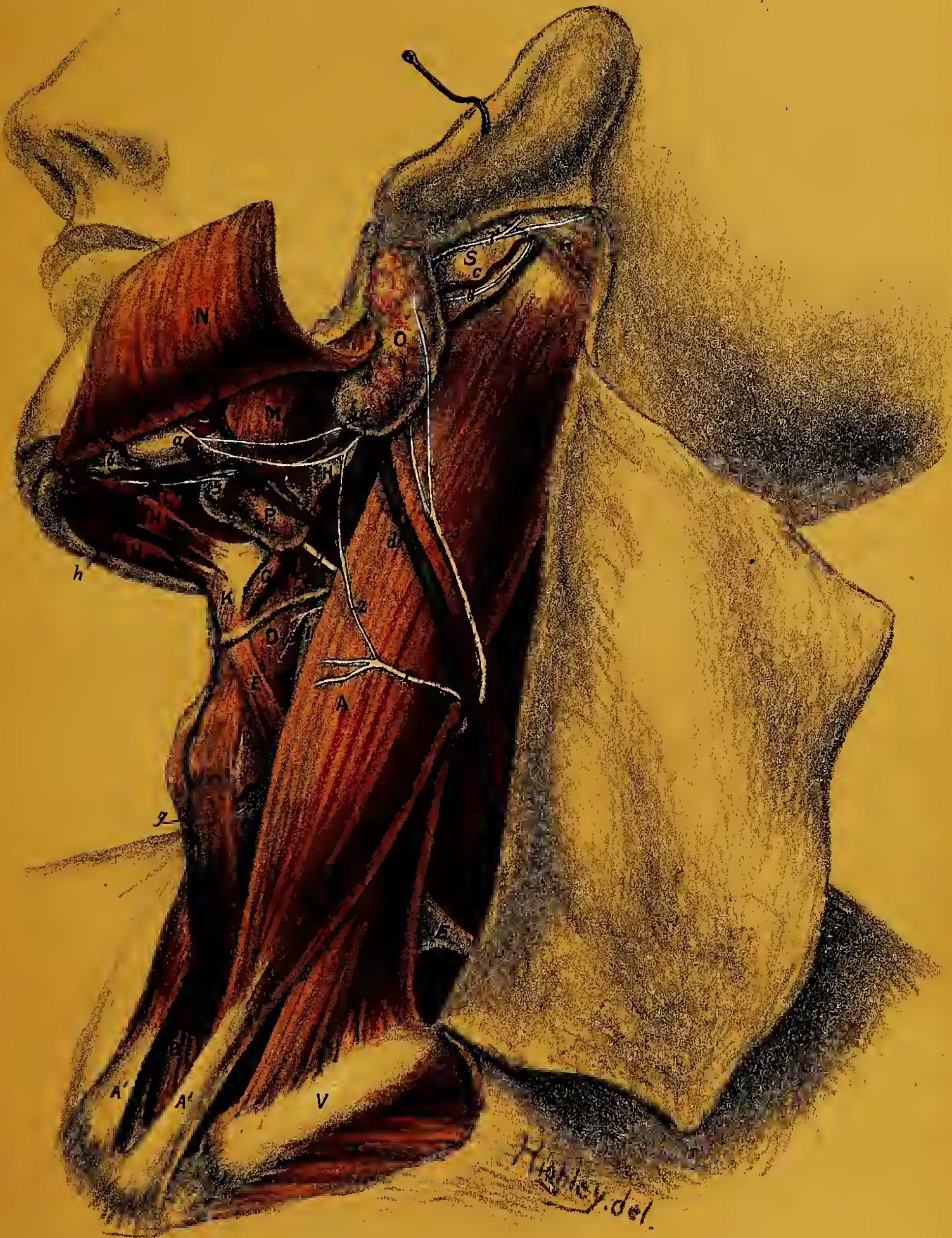

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PLATE XL.

THE ANTERIOR TRIANGLE—SECOND VIEW.

In this dissection the anterior edge of the sterno-mastoid has been turned back to expose the structures lying beneath it.

The **Anterior triangle** of the neck is bounded—

In front.—By the middle line.

Above.—By the body of the jaw, and a line drawn from it to the mastoid process.

Behind.—By the sterno-mastoid.

This space is subdivided into three smaller triangles by the passage across it of the omo-hyoid muscle below and the digastric above.

i. The **lower carotid** or tracheal is bounded—

In front.—By the middle line.

Above.—By the omo-hyoid.

Behind.—By the sterno-mastoid.

Floor is formed by the longus colli and scalenus anticus.

Contents.—Sterno-hyoid and thyroid muscles, together with the twigs from the ansa hypoglossi. Carotid sheath, containing the carotid artery, internal jugular vein and vagus nerve; inferior thyroid artery, sympathetic with middle cervical ganglion, recurrent laryngeal nerve, thyroid gland and middle and inferior thyroid veins, lower part of larynx, trachea, and œsophagus.

ii. The **upper carotid triangle** is bounded—

Above.—By the digastric.

Below.—By the omo-hyoid.

Behind.—By the sterno-mastoid.

Floor is formed by parts of the thyro-hyoid, thyro-hyoid membrane, hyoglossus, middle and inferior constrictors of the pharynx.

Contents.—Common, internal and external carotids, superior thyroid, lingual, facial, occipital, and ascending pharyngeal arteries. Internal jugular superior thyroid, facial, lingual, ascending pharyngeal and occipital (sometimes) veins. Hypoglossal, descendens noni, twig to thyro-hyoid from hypoglossal, vagus, sympathetic, superior laryngeal, with its external laryngeal branch; spinal accessory. Parts of the larynx and pharynx.

iii. The **submaxillary triangle** is bounded—

Above.—By the body of the jaw, and line drawn from this to the mastoid process.

Below.—By the digastric (posterior belly) and stylo-hyoid muscles.

In front.—By the middle line.

Floor is formed by anterior belly of digastric, mylo-hyoid and hyoglossus.

Contents.—Submaxillary gland, facial artery and vein, mylo-hyoid vessels and nerve, and submental vessels; posteriorly is the external carotid artery in the parotid gland, giving off the temporal internal maxillary and posterior auricular branches and facial nerve; deeper than this lies the internal carotid artery, internal jugular vein and the vagus, separated from the external carotid by the stylo-glossus and stylo-pharyngeus muscles and glosso-pharyngeal nerve. These are separated from the structures in the anterior portion of the triangle by the stylo-mandibular ligament, which is really only a process of the deep cervical fascia, and should not be called a ligament.

PLATE XL.

MUSCLES

A Sterno-mastoid.
B Sterno-hyoid.
C Sterno-thyroid.
D Thyro-hyoid.
E Omo-hyoid.
F Stylo-hyoid.
G Hyoglossus.
H Digastric.
K Supra-hyoid aponeurosis.
L Mylo-hyoid.
M Masseter.
N Platysma.
O Splenius.
P Levator anguli scapulæ.
R Scalenus medius.
S Scalenus anticus.
T Deep surface of trapezius.
U Parotid gland.
V Submaxillary gland.
W Great cornua of hyoid bone.
X Thyro-hyoid membrane.
Z Pomum Adami.
† Lymphatic glands under sterno-mastoid.

VESSELS

a Common carotid.
b External carotid.
c Internal carotid.
d Occipital artery.
e Facial artery.
f Sterno-mastoid branch of occipital.
g Superior thyroid.
h Superior laryngeal branch of superior thyroid.
i Sterno-mastoid branch of superior thyroid.
k Submental branch of facial.
l Internal jugular vein.
m Anterior division of temporo-maxillary vein joining facial vein.
o External jugular.
p Posterior auricular vein.
r Posterior auricular artery.
s Supra-scapular artery.

NERVES

1 Hypoglossal.
2 Descendens noni or cervicis.
3 Twig from hypoglossal to thyro-hyoid.
4 Twig from descendens noni to sterno-hyoid.
5 Spinal accessory.
6 Great auricular.
7 Small occipital.
8 An accessory or third occipital from the third cervical.
9 Communication from third and fourth cervical to join spinal accessory in trapezius.
10 Supra-clavicular branches of cervical plexus.
11 Cords of brachial plexus.
12 Posterior auricular branch of facial.
13 Mylo-hyoid branch of inferior dental.
14 Superior laryngeal branch of vagus.

PL. XL.

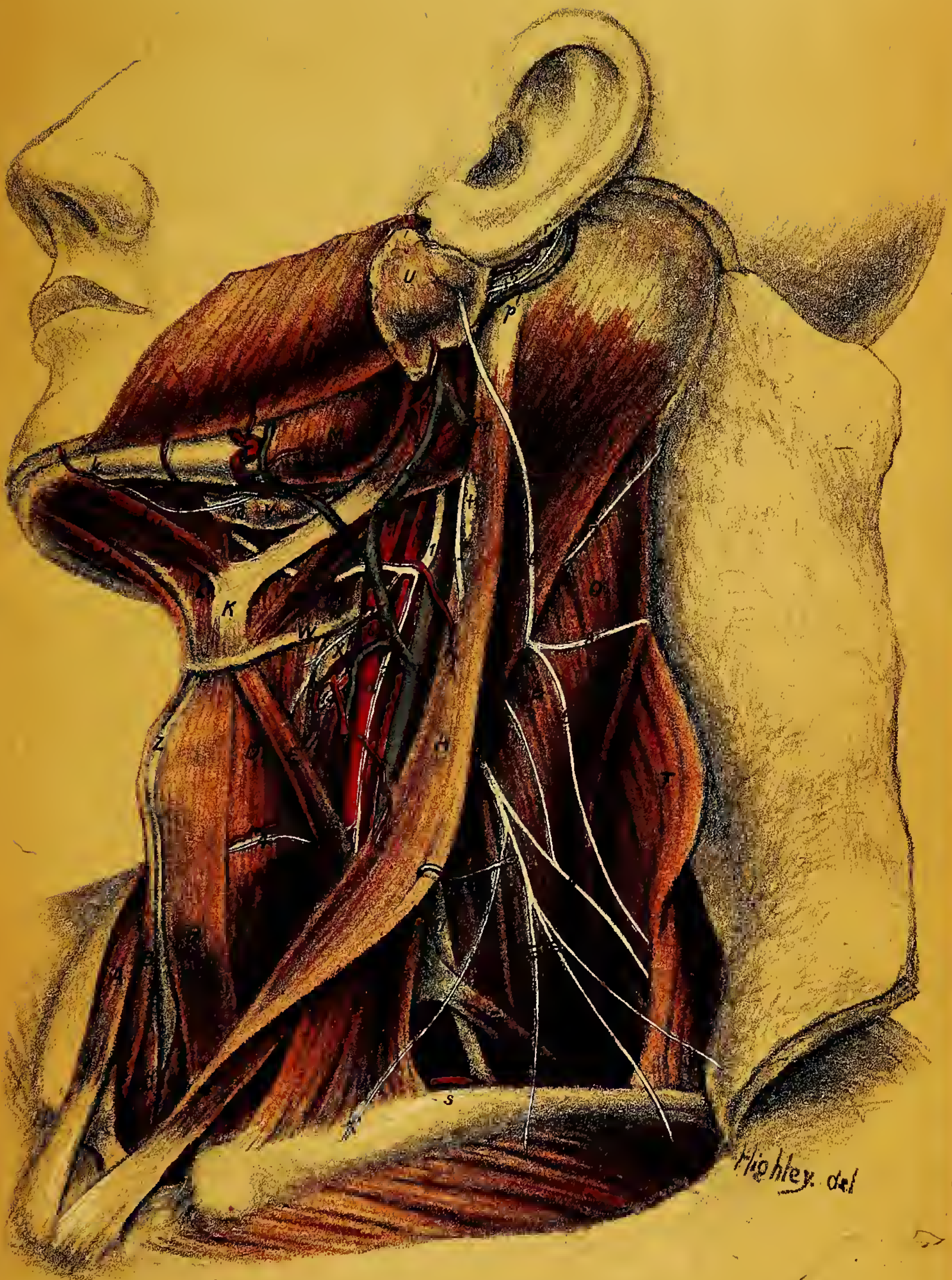

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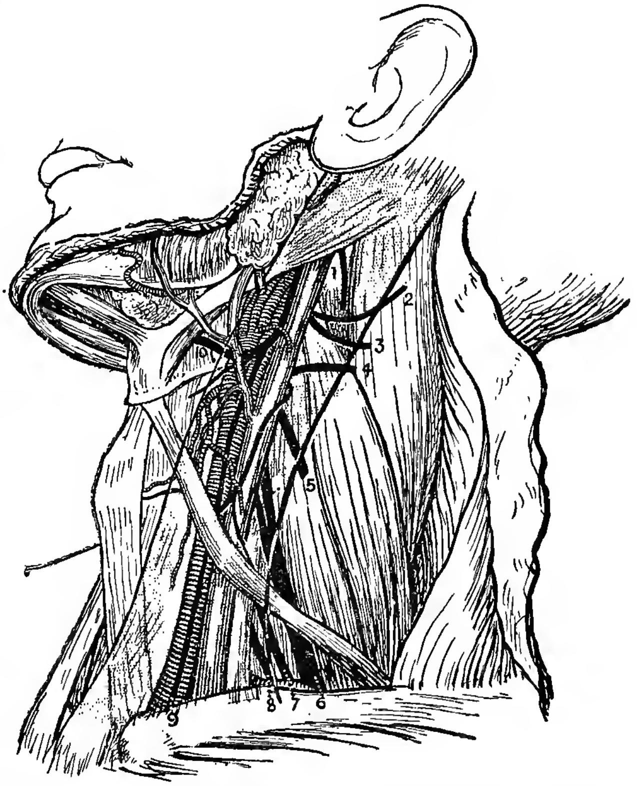
PLATE XLI.

THE SIDE OF THE NECK WITH THE STERNO-MASTOID MUSCLE REMOVED.

In this dissection, which is a deeper one on the same subject as plates 39 and 40, the sterno-mastoid muscle has been cut across its centre and the upper half turned up and left to show the course of the spinal accessory nerve, while the lower part with the inner half of the clavicle has been removed. Thus the two triangles have been thrown into one.



1. Spinal accessory. 2. Small occipital. 3. Great auricular. 4. Superficial cervical. 5. Supra-clavicular. 6, 7, 8. Cords of brachial plexus. 9. Twigs from ansa hypoglossi. 10. Hypoglossal.
The phrenic nerve has unfortunately been missed out in the diagram.

The accompanying diagram has been introduced to show the structures covered by the sterno-mastoid muscle. They are:

Muscles. — Sterno-hyoid and thyroid, scalenus anticus and medius, rectus capitis anticus major, splenius, levator anguli scapulæ; digastric, omo-hyoid, edge of thyro-hyoid, inferior constrictor of the pharynx, deep cervical fascia.

Vessels.— Common, external, internal carotids, superior thyroid and its sterno-mastoid branch, facial, lingual, occipital, posterior auricular, thyroid axis and its branches, inferior thyroid with the ascending cervical, transverse cervical, supra-scapular; internal jugular, facial and superior thyroid, middle thyroid, anterior jugular and external jugular veins.

Nerves.—Hypoglossal, spinal accessory, descendens noni or cervicis, ansa hypoglossi and communicans noni; the roots of the cervical and brachial plexuses, phrenic and facial, small occipital, great auricular, superficial cervical, supra-clavicular nerves.

Glands.—Parotid and deep lymphatic glands.

Bones.—Mastoid process, transverse processes of the cervical vertebræ, sternum.

Joint.—Sterno-clavicular.

PLATE XLI.

MUSCLES

A Sterno-mastoid.
B Trapezius.
C Splenius capitis.
D Splenius colli.
E Levator anguli scapulæ.
F Scalenus medius.
G Scalenus anticus.
H Omo-hyoid.
I Sterno-hyoid.
K Sterno-thyroid.
L Thyro-hyoid.
M Crico-thyroid.
N Digastric.
O Supra-hyoid aponeurosis.
P Stylo-hyoid.
R Hyoglossus.
S Masseter.
T Platysma.
U Thyro-hyoid membrane.
V Submaxillary gland.
W Thyroid gland.
X Subclavius muscle.
Y Capsular ligament of lower jaw.
Z Inferior constrictor of pharynx.
† Stenson's duct.

VESSELS

a Left common carotid.
b Right common carotid.
c Left internal jugular vein.
d Subclavian vein.
e External jugular vein.
f Supra-scapular vein.
g Subclavian artery.
h Supra-scapular artery.
i Transverse cervical.
k Inferior thyroid.
l Ascending cervical branch of inferior thyroid.
m Internal carotid.
n External carotid.
o Facial artery.
p Occipital artery.
r Posterior auricular.
s Temporal
t Transverse facial branch of temporal.
v Superior thyroid.
x Superior laryngeal branch of superior thyroid.
z Middle thyroid vein.

NERVES

1 Facial.
2 Temporal branch of facial.
3 Malar and infra-orbital branches.
4 Buccal branch.
5 Supra-mandibular branch.
6 Infra-mandibular branch.
7 Posterior auricular branch.
8 Communication between facial and auriculo-temporal.
9 Spinal accessory.
10 Hypoglossal.
11 Descendens noni.
12 Second cervical.
13 Third cervical.
14 Fourth cervical.
15 Fifth cervical.
16 Sixth cervical.
17 Seventh cervical.
18 Eighth cervical.
19 Communicans noni.
20 Twig from second cervical to spinal accessory.
21 Small occipital.
22 Great auricular.
23 Superficial cervical.
24 Twig of communication from third cervical to spinal accessory.
25 Twig of communication from third and fourth cervical to spinal accessory also supplying trapezius.
26 Muscular branch to levator anguli scapulæ.
27 Phrenic nerve.
28 Nerve to subclavius.
29 Posterior thoracic.
30 Muscular twigs from ansa hypoglossi to sterno-thyroid.
31 Superior laryngeal.
32 Supra-clavicular branches of cervical plexus.
33 Left recurrent laryngeal.

PL. XLI

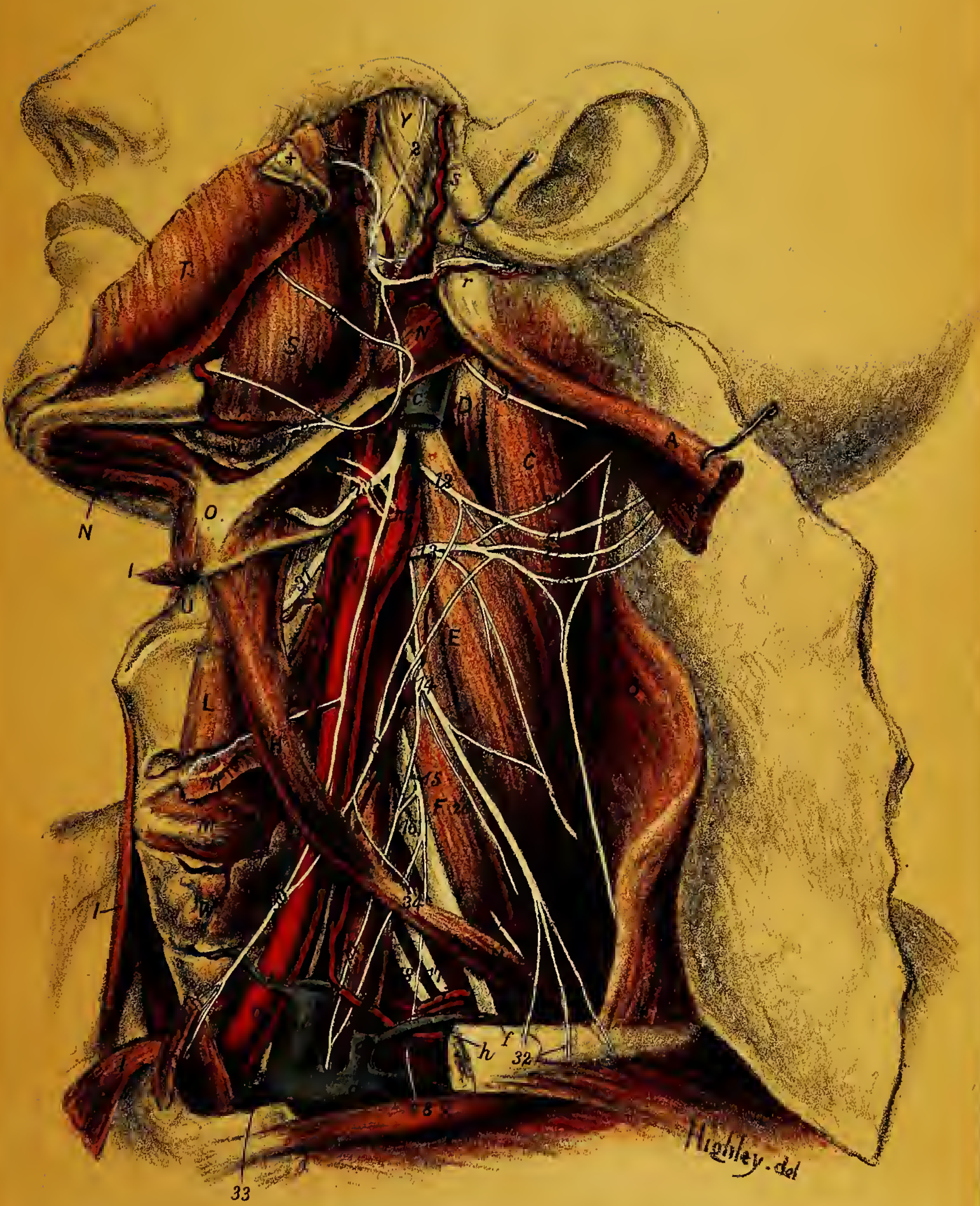


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PLATE XLII.

THE SUBOCCIPITAL TRIANGLE.

In this dissection the trapezius was completely removed on the right side to expose the complexus and splenius, on the left the splenius was cut away from its origin from the ligamentum nuchæ and supraspinous ligament and turned outwards, showing its division into splenius colli and capitis. The complexus was then divided about its centre, and the ends turned up and down to expose the suboccipital triangle which lies beneath it.

The **suboccipital triangle** corresponds to the space between the inferior curved line of the occiput and the level of the spine of the axis, and is bounded

Internally.—By the rectus capitis posticus major and minor.
Externally.—By the superior oblique.
Below.—By the inferior oblique.
Floor.—Formed by the posterior occipito-atlantal ligament and the posterior arch of the atlas.
Contents.—Suboccipital nerve and its branches to the recti postici, obliques, and complexus; vertebral artery with some muscular branches and the commencement of the vertebral vein.

The following diagram shows the arrangement of the posterior primary branches of the upper cervical nerves. It may be remembered as a general rule that all the internal branches of the posterior divisions of the spinal nerves as far as the sixth dorsal (thoracic) give off cutaneous branches, while the external supply muscles. Below, this arrangement is reversed, the outer branches giving off the cutaneous twigs, and the internal, muscular; the exceptions being the first cervical, which does not split, and the first two lumbar, which supply no skin branches at all. (*a*) Posterior and (*b*) anterior divisions of the suboccipital nerve.

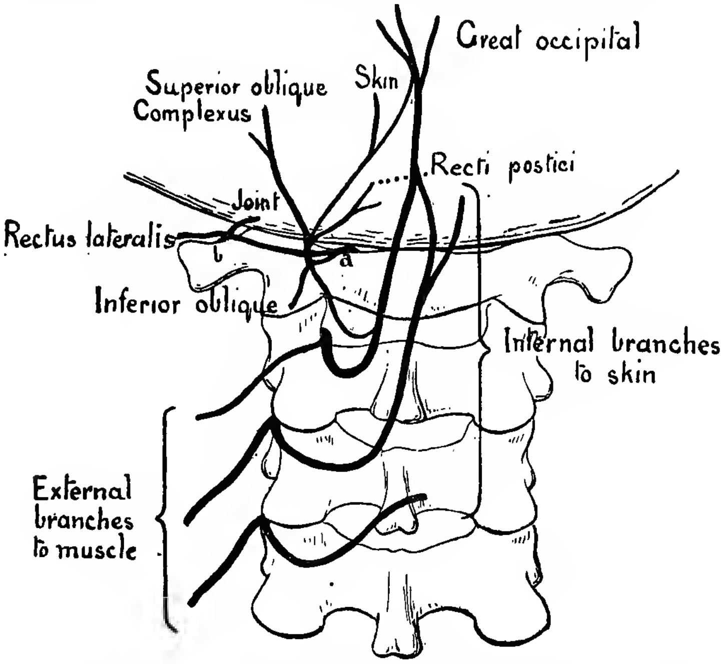


PLATE XLII.

MUSCLES

A Complexus (right).
A′ Complexus (left) cut.
B Inner portion of complexus, known as biventer cervicis.
C Splenius capitis.
C′ Splenius colli.
D Right sterno-mastoid.
E Cervical fascia over the sterno-mastoid.
F Trapezius.
F′ Origin of trapezius from superior curved line and external protuberance of occipital bone.
G Levator anguli scapulæ.
H Serratus posticus superior.
H′ Insertion of serratus into ribs.
I Rhomboideus minor.
K Rhomboideus major.
L Triangular smooth surface at base of spine of scapula.
M Semispinalis colli.
N Transversalis colli.
O Cervicalis ascendens.
P Scalenus posticus.
Q The ribs; the numbers show their order.
R Left sterno-mastoid.
S Rectus capitis posticus minor.
T Rectus capitis posticus major.
V Inferior oblique.
W Superior oblique.
X Trachelo-mastoid.
Y Articular processes of cervical vertebræ.
    2 = second and third.
    3 = third and fourth.
    4 = fourth and fifth, &c.
Z Posterior arch of atlas.
† External occipital protuberance.

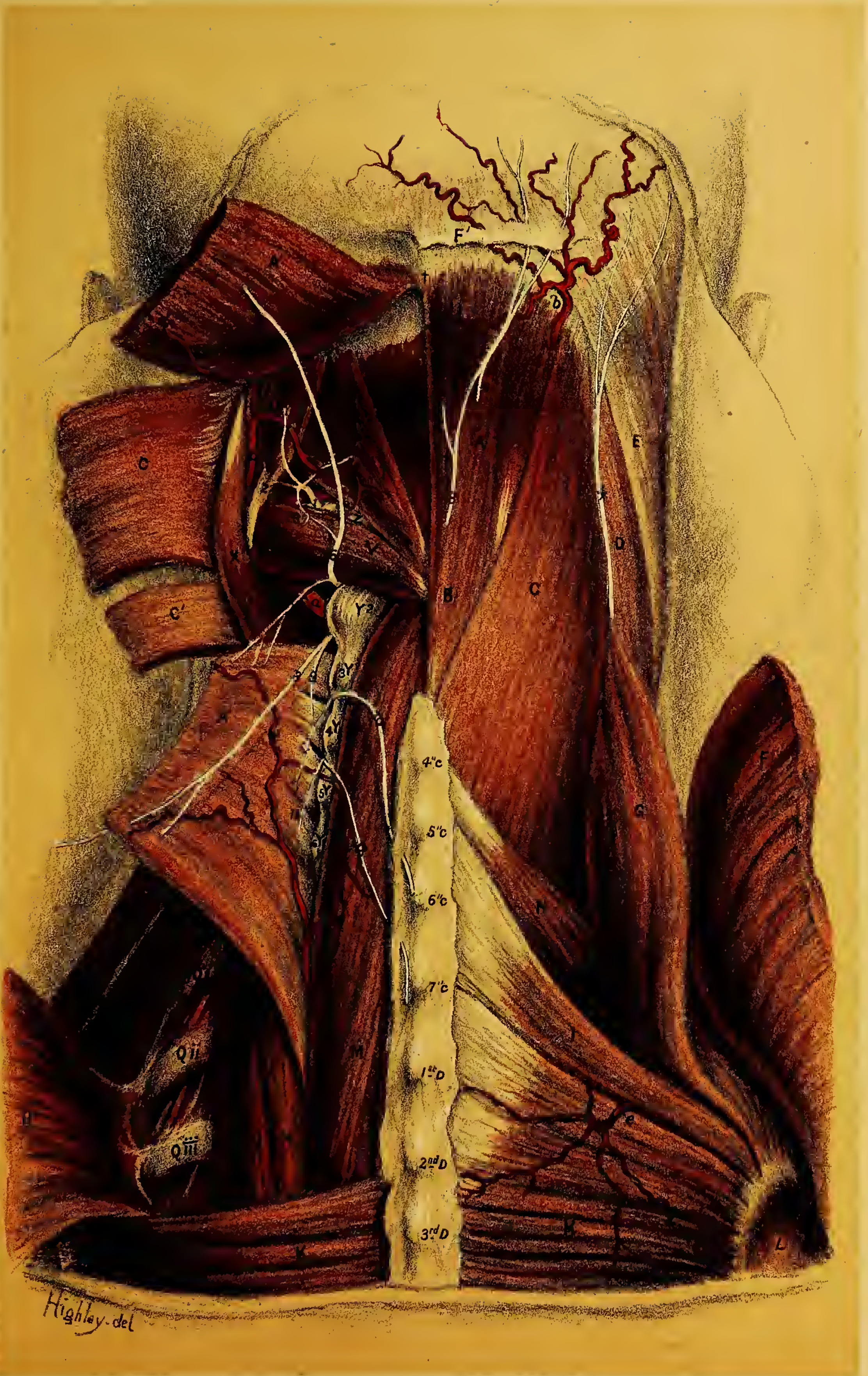
* The numbers in the centre line mark the position of the spines of the cervical and dorsal vertebræ.

VESSELS

a Vertebral artery.
b Occipital artery.
c Princeps cervicis, a branch of the occipital.
d Profunda cervicis, a branch of the superior intercostal ascending to anastomose with the princeps.
e A twig from the posterior scapular.

NERVES

1 Suboccipital.
2 Its anterior division.
3 Its branch to the inferior oblique, also sending a twig to join the *great occipital.*
4 Its branch to the recti postici.
5 Its branch to the superior oblique which also sent a twig to complexus.
6 Great occipital (internal branch of posterior division of second cervical).
7 External muscular branch of second cervical.
8 Internal branch of third cervical which joins great occipital after piercing complexus.
9 External muscular branch of third.
10 Internal branch of fourth.
11 External branch of fourth.
12 Internal branch of fifth.
13 External branch of fifth.
14 Small occipital.



Bevau & Highley lith

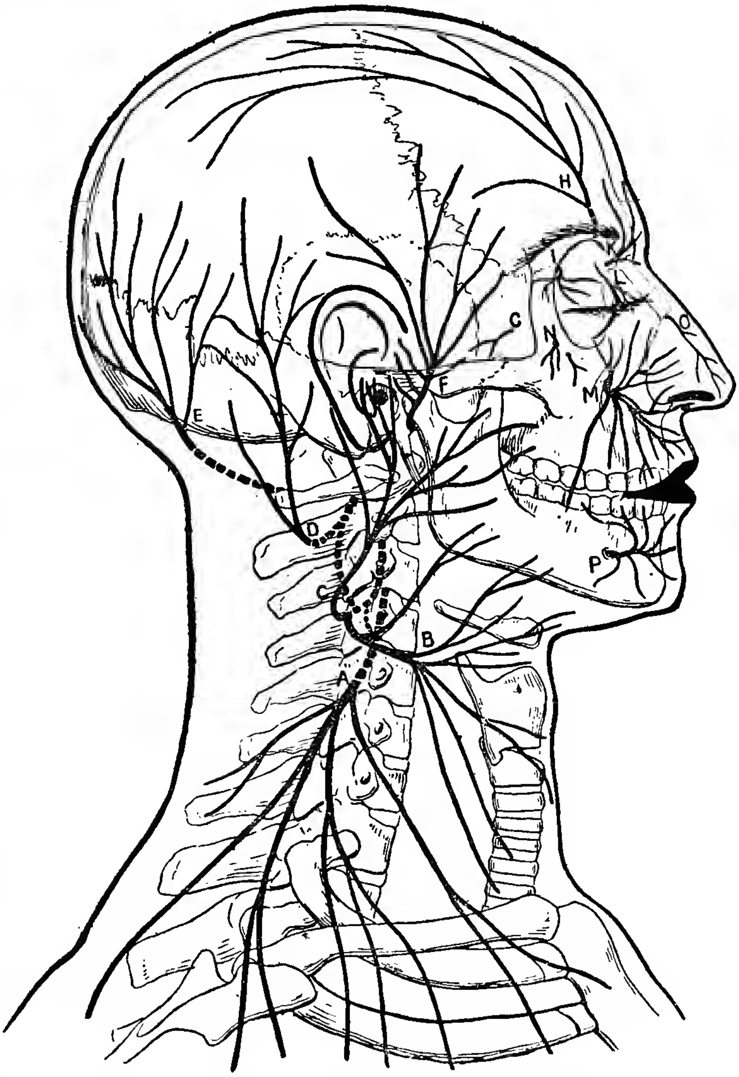
Dissected by C G Brodie

Hanhart imp.

PLATE XLIII.

THE FACE.

This dissection shows as far as possible the structures of the face; no attempt was made to dissect out the small muscles of the nose, but the rest of the structures are well shown. The accompanying diagram shows the cutaneous nerves of the head and neck.



(A) supra-clavicular (3 + 4 C); (B) superficialis colli (2 + 3 C); (C) great auricular (2 + 3 C); (D) small occipital (2 C); (E) great occipital (posterior division of 2 + 3 C); (F) auriculo-temporal (3rd division of 5th); (G) temporal twig of temporo-malar (2nd division of 5th); (H) supra-orbital; (I) lachrymal; (K) frontal; (L) twigs from infra-trochlear loop (all from 1st division of 5th); (M) infra-orbital (2nd division of 5th); (N) malar branch of temporo-malar (2nd division of 5th); (O) nasal nerve (1st division of 5th); (P) mental branch of inferior dental (3rd division of 5th).

There was no division of the zygomatic muscle into major and minor; in fact the latter is but a slip of the major which has remained separate from its anterior edge. Nor is there any separation, as a rule, between the adjacent edges of the levator labii superioris and the levator labii superioris alæque nasi, and but a faint attempt at division; in fact the whole should be called the levator labii superioris, some of whose inner fibres get an insertion into the alæ of the nose. In the chimpanzee these four muscles, the two zygomatici and the two levators, are united to form one broad muscle which arises round the circumference of the orbit and runs down to be inserted into the upper lip.

PLATE XLIII.

MUSCLES

A Anterior muscular portion of occipito-frontalis.
B Its intermuscular aponeurosis.
C Orbicularis palpebrarum (its orbicular portion).
D Orbicularis palpebrarum (its palpebral portion).
E Pyramidalis nasi.
F Compressor nasi.
G Levator labii superioris alæque nasi.
H Levator labii superioris.
I The orbicular zygomaticus.
K Zygomaticus major.
L Levator anguli oris.
M Depressor anguli oris.
N Depressor labii inferioris.
O Platysma.
P Part of the platysma which often becomes slightly separated from the remainder of the muscle, and is called the Risorius.
R Buccinator.
S Orbicularis oris.
T Masseter.
U Parotid gland.
V Socia parotidis, and Stenson's duct.
W Zygomatic arch.
X Placed on the temporal fascia over temporal muscle.
Y Cervical fascia covering parotid gland turned back.

VESSELS

a Facial artery.
b Common origin of the inferior labial and coronary.
c Inferior coronary.
d Submental branch of facial turning upwards to anastomose with the inferior labial.
e Superior coronary.
f Artery to the septum from the superior coronary.
g Lateralis nasi.
h Angular artery.
k Dorsalis nasi.
l Nasal dividing into dorsalis nasi and an anastomotic branch to the angular.
m Transverse facial.
n Infra-orbital.
o Temporal artery dividing into
p Its posterior and
r Its anterior division.
s Middle temporal.
t Temporal vein.
v Angular vein.
w Facial vein.
x Deep facial.

NERVES

1 Auriculo-temporal (third division of fifth).
2 Temporal twig of orbital (second division of fifth).
3 External branch of nasal (first division of fifth).
4 Temporal branch of facial.
5 Malar branch of facial.
6 Infra-orbital branch of facial.
7 Buccal branch of facial.[*]
8 Supra-mandibular branch of facial.
9 Infra-orbital (second division of fifth).
10 Palpebral branches of infra-orbital.
11 Labial branches of infra-orbital.
12 Great auricular.

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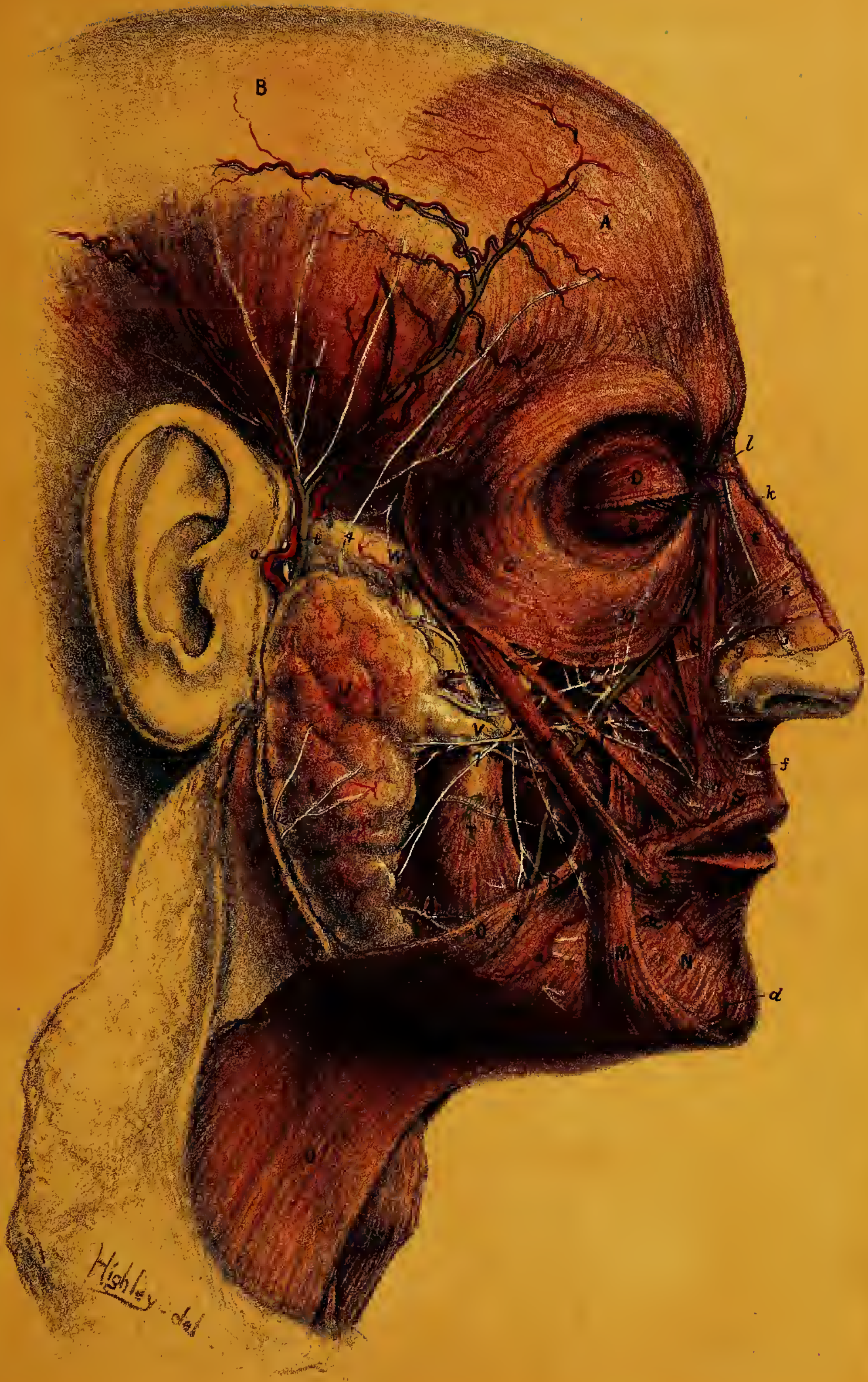
[*] In the plate this number has been placed on the wrong branch; it should have been written on the nerve just above T.



Bergeau & Highley lith.

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Hanhart imp

PLATE XLIV.

FIRST VIEW OF THE PTERYGOID REGION WITH THE MASSETER MUSCLE REMOVED.

In this dissection the zygomatic arch was sawn through in front of the external lateral ligament of the jaw and just behind the attachment of the zygomaticus major to the malar bone, and both arch and masseter muscle turned down. The sterno-mastoid and splenius capitis were cut close to their insertion into the mastoid process, and part of the skull on either side of the superior curved line sawn away to expose the lateral sinus.

A probe has been introduced into the front of the sinus to show how it dips downwards, grooving the mastoid process in the fossa sigmoidea. The external auditory meatus is the remnant of the visceral cleft between the mandibular and hyoid arches. The lateral sinus varies considerably in its course, but, roughly speaking, it runs down on the mastoid, opposite the line of reflection of the skin, on to the pinna posteriorly. The accompanying diagram shows the usual course of the lateral sinus (A) upon the exterior of the skull, and the position of a trephine hole (B) to expose it, the point of a ¾-inch trephine being placed 1⅛ inch behind the meatus, and on a level with its upper border, *i.e.* ¼ inch above the centre of the meatus. Its course, however, varies extremely in its position and extent, but generally it lies ½ inch behind the external auditory meatus; hence in tapping the antrum mastoidea place the drill (C), which should be ¼ inch diameter, as near as possible to the posterior edge of the meatus on a level with its upper limit; do not penetrate more than ¾ inch, or the risk will be run of injuring the external semicircular canal; the cells are usually opened at a depth of ⅗ inch. If the drill is placed more posteriorly, risk is run of perforating the lateral sinus. The line marked (D) in diagram is Reed's base line, which is drawn from the lower margin of orbit through centre of meatus, and usually touches the external occipital protuberance or falls a little below it.

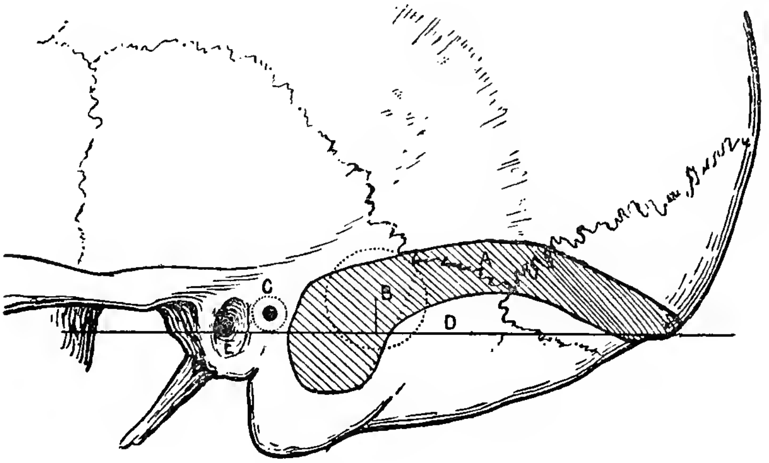


PLATE XLIV.

MUSCLES

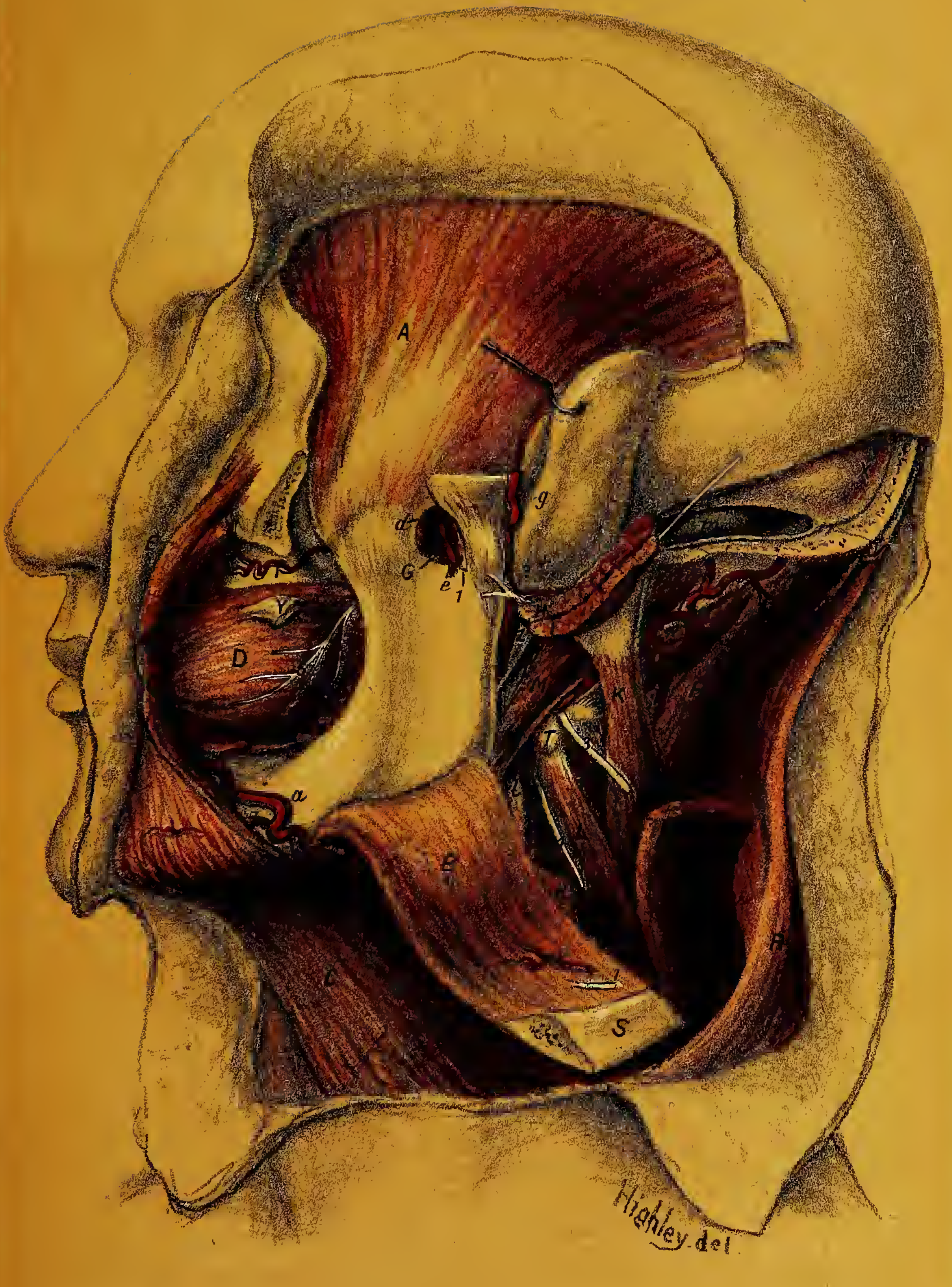
A Temporal.
B Masseter.
C Platysma.
D Buccinator.
E Zygomaticus major.
F Levator labii superioris.
G External pterygoid.
H Insertion of sterno-mastoid.
I Splenius capitis.
K Trachelo-mastoid.
L Splenius colli.
M Digastric (posterior belly).
N Inferior oblique.
O Superior oblique.
P Complexus.
R Trapezius.
S Zygomatic arch.
T Transverse process of first cervical vertebra.
V External occipital protuberance.
X Dura mater.
Y Stenson's duct.
Z Styloid process.

VESSELS

a Facial artery.
b Inferior labial.
c Buccal branch of the internal maxillary.
d Deep temporal coming off in a common trunk with
e The masseteric artery.
f Alveolar branch from the third division of the internal maxillary.
g Temporal artery.
h Posterior auricular artery.
i Occipital artery.
k The princeps cervicis from the occipital.
l Internal jugular vein.
m Lateral sinus (laid open).

NERVES

1 Masseteric branch of third division of fifth.
2 Facial nerve.
3 Spinal accessory.
4 Second cervical.
5 Buccal branch of third division of fifth.



Bergau & Highley lith. Dissected by [illegible] Brodie Hanhart imp.

PLATE XLV.

SECOND VIEW OF THE PTERYGOID REGION, TEMPORAL MUSCLE, AND PART OF RAMUS OF JAW REMOVED.

This plate shows a deeper dissection of the same subject as the previous drawing. The coronoid process has been cut through at its base and turned upwards with the temporal muscle, and the ramus of the jaw sawn through just below the pterygoid fossa and above the inferior dental foramen and removed, exposing the first and second portions of the internal maxillary artery.

The first portion of the artery passes between the ramus of the jaw and the so-called long internal lateral ligament; it is generally described as giving off four branches, but it is much more usual to find only two, viz., the inferior dental and middle meningeal, the latter giving the tympanic and small middle meningeal. All these four arteries pass through bony foramina.

The second portion of the artery varies in its course, being sometimes superficial and sometimes deep to the external pterygoid muscle, the proportion given on the conjoint investigation of the Anatomical Committee being 54 per cent. above, and 44 per cent. below; this portion of the artery gives off four sets of muscular branches—buccal, pterygoids, temporal, and masseteric, and one arterial comes to the lingual nerve.

The third portion of the artery lies in the spheno-maxillary fossa, and gives six branches which all pass through bony foramina alveolar, infra-orbital, posterior pharyngeal, Vidian, posterior palatine, naso-palatine.

The long internal lateral or spheno-mandibular ligament is a thin loose band of fibrous tissue which stretches across from the spinous process of the sphenoid to the inner edge of the inferior dental foramen. It is too lax to be of much use as a ligament, and is really the fibrous remains of a part of the Meckelian bar of cartilage.

PLATE XLV.

MUSCLES

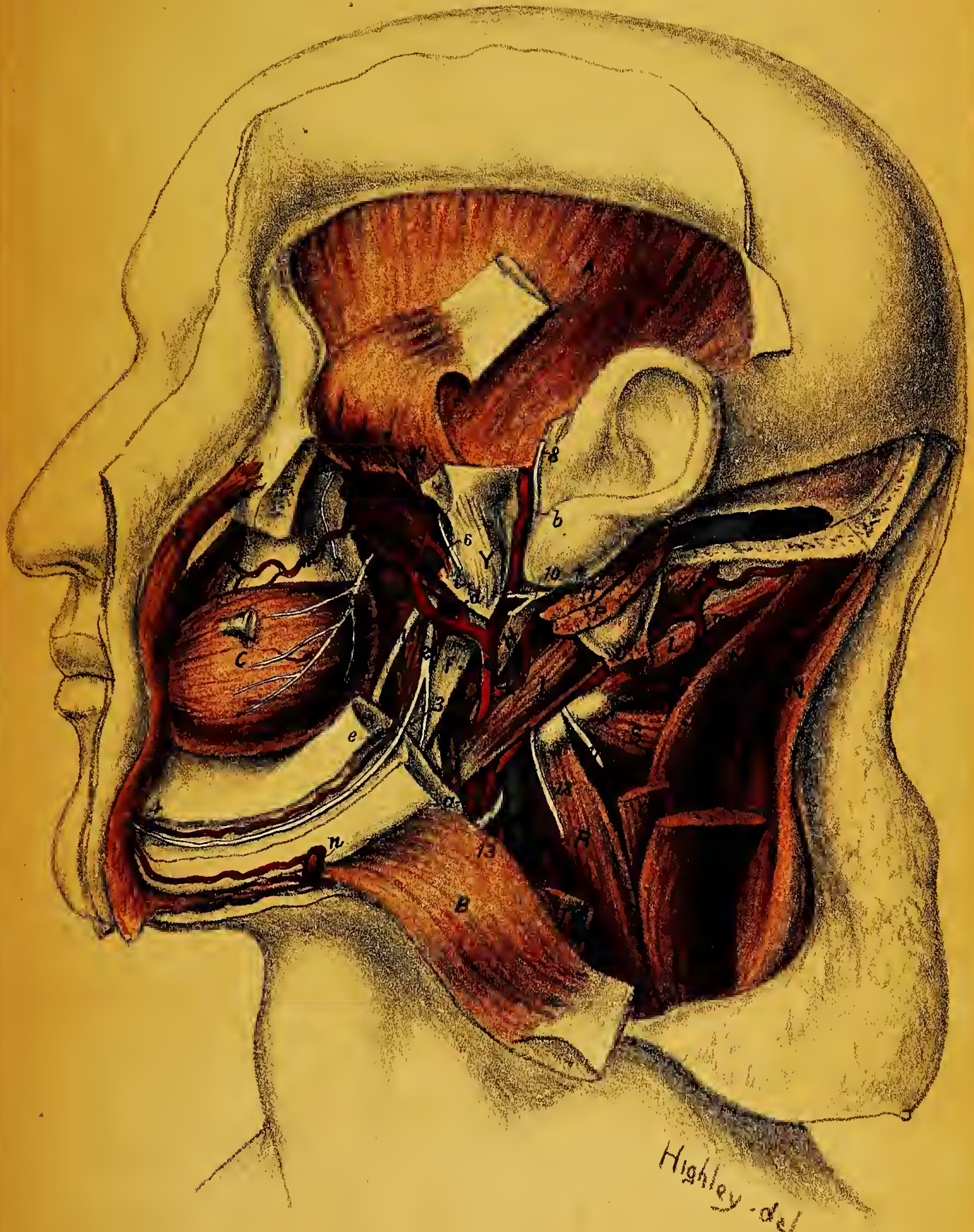
A Temporal.
B Masseter.
C Buccinator.
D External pterygoid.
E Internal pterygoid.
F Long internal lateral ligament (spheno-mandibular).
G Stylo-glossus.
H Styloid process.
I Digastric (posterior belly).
K Rectus capitis lateralis.
L Superior oblique.
M Complexus.
N Trapezius.
O Trachelo-mastoid.
O′ Insertion of Trachelo-mastoid into mastoid process.
P Splenius capitis.
R Splenius colli.
S Inferior oblique.
T Insertion of the sterno-mastoid.
V Zygomaticus major.
X Levator labii superioris.
Y Capsule of the lower jaw.
Z Depressor anguli oris and labii inferioris.

VESSELS

a External carotid.
b Temporal.
c Internal maxillary.
d Middle meningeal branch of internal maxillary.
e Inferior dental.
f Buccal.
g Deep temporal.
h Alveolar.
i Masseteric.
k Posterior auricular.
l Occipital.
m Princeps cervicis branch of occipital.
n Facial.
o Lateral sinus.
p Internal jugular vein.

NERVES

1 Lingual.
2 Inferior dental.
3 Mylo-hyoid branch of inferior dental.
4 Mental branch of inferior dental.
5 Buccal branch of third division of fifth.
6 Masseteric branch of the third division of fifth.
7 Deep temporal branches of third division of fifth.
8 Auriculo-temporal.
9 Posterior dental from second division of the fifth.
10 Facial.
11 Spinal accessory.
12 Second cervical.
13 Hypoglossal.



Berjeau & Highley lith

Dissected by C G Brodie

Hanhart imp

PLATE XLVI.

THIRD VIEW OF PTERYGOID REGION AND ORBIT FROM THE OUTER SIDE.

In the dissection represented in this plate the capsule of the temporo-mandibular joint has been cut, and the condyle of the jaw, its interarticular cartilage, and the external pterygoid have been pulled forwards to expose the third division of the fifth nerve which lies behind it. Two saw cuts have been made through the outer wall of the orbit parallel to the floor and roof, and the outer wall partly cut away and partly turned forwards. In chipping away the posterior part to allow a better view, the dura mater of the middle fossa of the skull has been exposed.

In the plate the stylo-mastoid artery is shown as a branch from the occipital ; this is not unfrequently the case when the vessel is not given off by the post-auricular.

PLATE XLVI.

MUSCLES

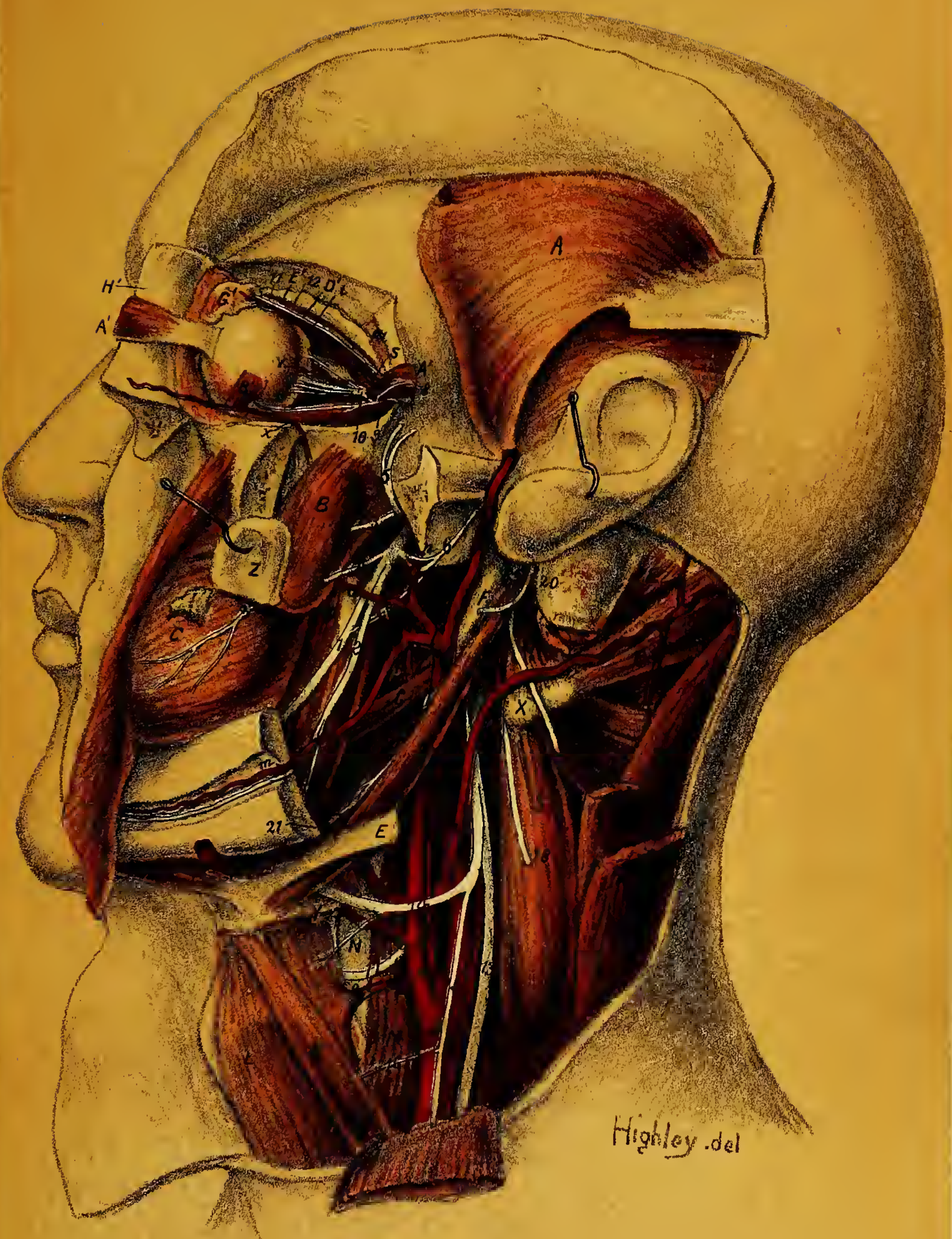
A	Temporal
B	External pterygoid.
C	Buccinator.
D	Internal pterygoid.
E	Digastric.
F	Styloid process.
G	Stylo-glossus.
H	Stylo-pharyngeus.
I	Stylo-hyoid.
K	Omohyoid.
L	Thyro-hyoid.
M	Inferior constrictor.
N	Thyro-hyoid membrane.
O	Rectus capitis lateralis.
P	Superior oblique.
R	Inferior oblique.
S	Levator anguli scapulæ.
T	Splenius.
V	Trachelo-mastoid.
W	Complexus.
X	Transverse process of atlas.
Y	Great cornua of hyoid bone.
Z	Condyle of lower jaw covered by its interarticular cartilage.
A′	External rectus.
B′	Inferior oblique (oculi).
C′	Inferior rectus.
D′	Superior rectus.
E′	Dura mater ensheathing orbit.
F′	Dura mater of middle fossa.
G′	Lachrymal gland.
H′	Inner surface of malar bone turned out.

VESSELS

a	Common carotid.
b	Internal carotid.
c	External carotid.
d	Superior thyroid.
e	Superior laryngeal branch of *d*.
f	Lingual.
g	Facial.
h	Occipital.
i	Stylo-mastoid branch of occipital.
k	Princeps cervicis.
l	Internal maxillary.
m	Its inferior dental branch.
n	Its middle meningeal branch.
o	A pterygoid branch.
p	Ascending pharyngeal artery.
r	Temporal.
s	Ophthalmic.
t	Lachrymal branch of ophthalmic.
v	Ciliary arteries.
x	A branch from internal maxillary which accompanied the orbital nerve to malar bone.

NERVES

1	Lingual.
2	Inferior dental.
3	Buccal.
4	Muscular branch to external pterygoid.
5	Deep temporal branches.
6	Auriculo-temporal.
7	Chorda tympani.
8	Sixth nerve.
9	Inferior division of third nerve.
10	Ophthalmic ganglion.
11	Lachrymal.
12	Supra-orbital.
13	Pneumo-gastric.
14	Hypoglossal.
15	Descendens noni or cervicis.
16	Branch from descendens noni to omohyoid anterior belly.
17	Superior laryngeal from vagus.
18	Second cervical.
19	Spinal accessory.
20	Facial.
21	Glosso-pharyngeal.



[illegible] Highley lith

Dissected by [illegible] Brodie

Hanhart imp

PLATE XLVII.

DEEP VIEW OF THE PTERYGOID REGION AND SIDE OF NECK, GASSERIAN GANGLION, MUSCLES OF TONGUE.

This dissection is a continuation of the one in Plate XLVI.; the left side of the jaw having been completely removed to near the symphysis; the tongue was drawn out and fastened by a stitch to the tip of the nose, while the great wing of the sphenoid was chiselled away to expose the Gasserian ganglion. The styloid process was next cut off to expose more completely the structures lying deep to it.

Between the tensor and levator palati muscles is a whitish band; this is the cartilaginous portion of the Eustachian tube, which was left unlettered from want of space.

PLATE XLVII.

MUSCLES

A Mylo-hyoid.
B Genio-hyoid.
C Genio-hyo-glossus.
D Hyo-glossus.
E Stylo-glossus.
F Stylo-pharyngeus.
G Superior constrictor of pharynx.
H Middle constrictor.
I Inferior constrictor.
J Thyro-hyoid membrane.
K Thyro-hyoid.
L Insertion of the sterno-thyroid.
M Crico-thyroid.
N Thyroid gland.
O Trachea.
P Œsophagus.
R Aponeurosis of pharynx.
S Levator palati.
T Tensor palati.
U Styloid process.
V Buccal mucous membrane turned up.
W Rectus capitis lateralis.
X Inferior oblique.
Y Superior oblique.
Z Transverse process of atlas.
* Transverse process of sixth cervical vertebra.
A′ Complexus.
B′ Trachelo-mastoid.
C′ Splenius.
D′ Levator anguli scapulæ
E′ Trapezius.
F′ Scalenus medius.
G′ Scalenus anticus.
H′ Longus colli.
I′ Rectus capitis anticus major.
K′ Inferior oblique (oculi).
L′ Inferior rectus (oculi).
M′ Superior rectus (oculi).
N′ External rectus (oculi).
O′ Levator palpebræ.
P′ Lachrymal gland.
R′ Dura mater of middle fossa of skull.
S′ Antrum of Highmore.
T′ A portion of the submaxillary gland.
U′ Wharton's duct.

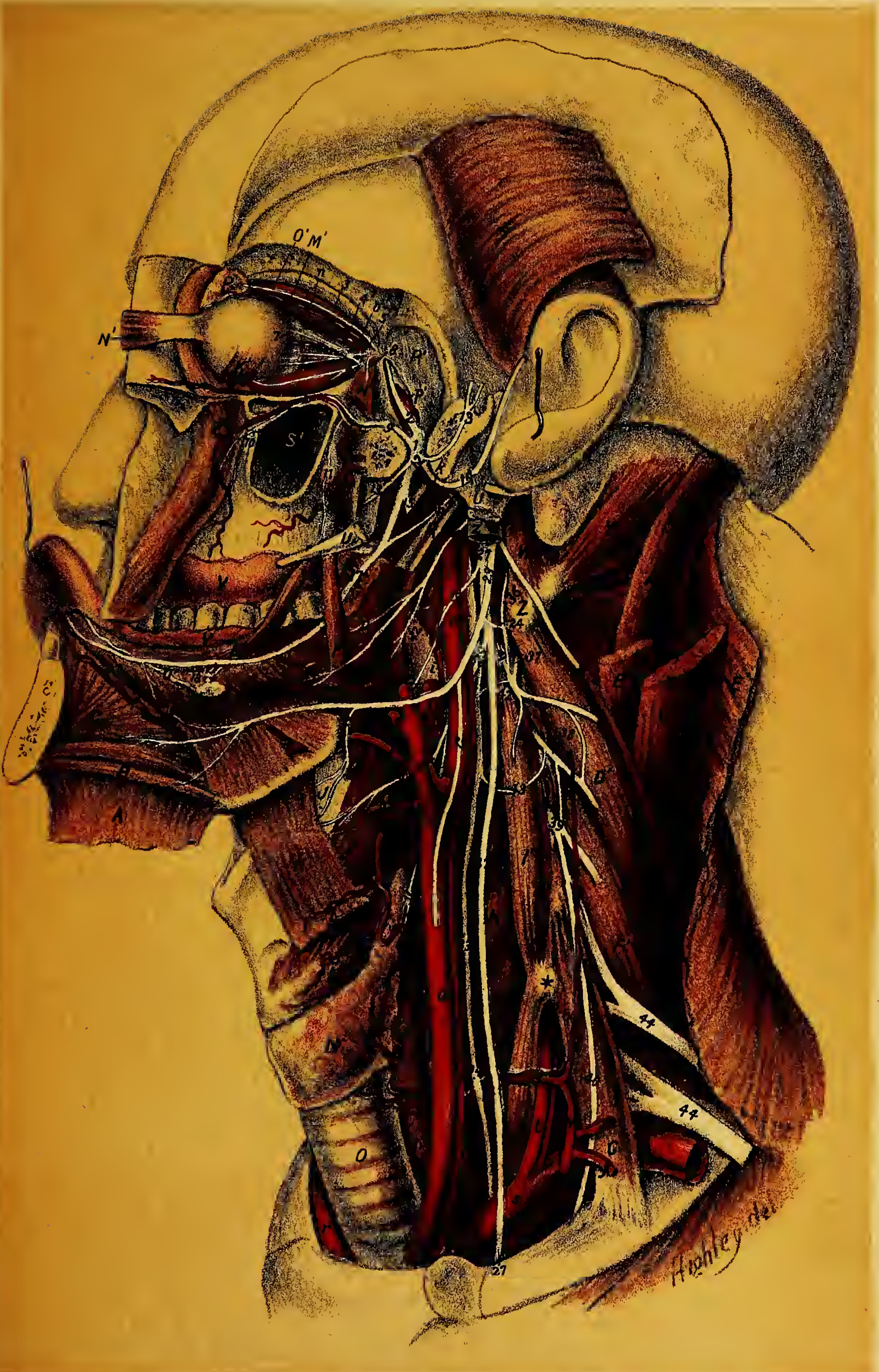
PLATE XLVII.—(Continued.)

VESSELS

a Left common carotid.
b Internal carotid.
c External carotid.
d Occipital.
e Facial.
f Lingual.
g Superior thyroid.
h Superior laryngeal branch of superior thyroid.
i Ascending pharyngeal.
k Middle meningeal.
l Termination of the internal maxillary.
m Infra-orbital.
n Lachrymal.
o Ophthalmic.
p Internal carotid in the cavernous sinus.
r Right common carotid.
s Subclavian.
t Vertebral.
v Inferior thyroid.
w Ascending cervical.
x Transverse cervical.
y Supra-scapular.
z Internal jugular.

NERVES

1 Gasserian ganglion.
2 Ophthalmic division or first division of fifth nerve.
3 The lachrymal from first division of fifth.
4 The nasal nerve from first division of fifth.
5 Ganglionic branch of the nasal nerve.
6 Inferior division of the third nerve to inferior oblique and inferior rectus; the short or motor root of the ganglion also comes off from this branch, the figure is directly under the ganglion.
7 Short ciliary branches from ganglion.
8 Sixth nerve.
9 Second division of fifth passing through foramen rotundum.
10 Infra-orbital.
11 Posterior dental.
12 Third division of fifth passing through foramen ovale.
13 Muscular branches from motor portion of third division of fifth.
14 Auriculo-temporal from third division of fifth.
15 Inferior dental from third division of fifth.
16 Chorda tympani from facial joining lingual.
17 Lingual from third division of fifth.
18 Submaxillary ganglion.
19 Communication between the lingual and hypoglossal.
20 Glosso-pharyngeal.
21 Its muscular branch to stylo-pharyngeus.
22 Its pharyngeal branch.
23 Hypoglossal.
24 Communication from first cervical to hypoglossal.
25 Descendens noni.
26 Branch from hypoglossal to thyro-hyoid.
27 Vagus.
28 Pharyngeal branch of vagus.
29 Superior laryngeal branch of vagus.
30 Internal laryngeal division of 29.
31 External laryngeal division of 29.
32 Superior cervical ganglion of sympathetic.
33 Cervical trunk of sympathetic.
34 Middle cervical ganglion.
35 Spinal accessory.
36 First cervical.
37 Second cervical.
38 Third cervical.
39 Fourth cervical.
40 Phrenic.
41, 42, 43 Communication between sympathetic and cervical nerves.
44 Cords of brachial plexus.



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Hanhart imp

PLATE XLVIII. Natural Size.

INTERIOR OF SKULL, TENTORIUM, CIRCLE OF WILLIS, FIRST VIEW OF ORBITS.

In this plate the calvarium has been removed in the usual way by a horizontal saw cut, and the brain carefully removed so as to leave intact the arteries composing the circle of Willis in their normal positions with relation to the nerves. The best way of doing this in the ordinary dissecting-room subject is to use a stream of water either from a syringe or tap and allow it to wash away the brain. On the left side the attached edge of the tentorium has been cut into to expose the lateral sinus.

The orbits were then opened in the usual manner, but if the dissector wishes to preserve the pulley of the superior oblique in situ, it will be best to place the tip of a finger in the inner corner of the orbit and saw through directly external to it.

The arteries comprising the circle of Willis are, the basilar behind dividing into the posterior cerebrals ; the internal carotids on either side in front giving off the anterior cerebrals, which are joined in front by a short trunk of somewhat variable size, the anterior communicating, and the middle cerebrals which are connected by means of the posterior communicating with the posterior cerebrals ; the posterior communicating are very variable in size and may not be of the same calibre on both sides of the body.

Thus is established a great circle of anastomosis at the base of the brain.

PLATE XLVIII. NATURAL SIZE.

MUSCLES

A Tentorium cerebelli.
B Free edge of the tentorium passing forward to be attached to the anterior clinoid process.
C Anterior cut extremity of the falx cerebri.
D Posterior cut edge of the falx cerebri, at its junction with the tentorium.
E Placed over the upper border of the dorsum sellæ.
F Anterior clinoid process.
G Olivary process.
H Levator palpebræ.
I Superior rectus.
K Superior oblique.
L Tendon of superior oblique.
M Sclerotic coat of eyeball.
N Lachrymal gland.
O Pulley of superior oblique.
P External rectus.
R Internal rectus.
S Placed in frontal sinus just in front of the infundibulum.
T Orbital plate of frontal bone.

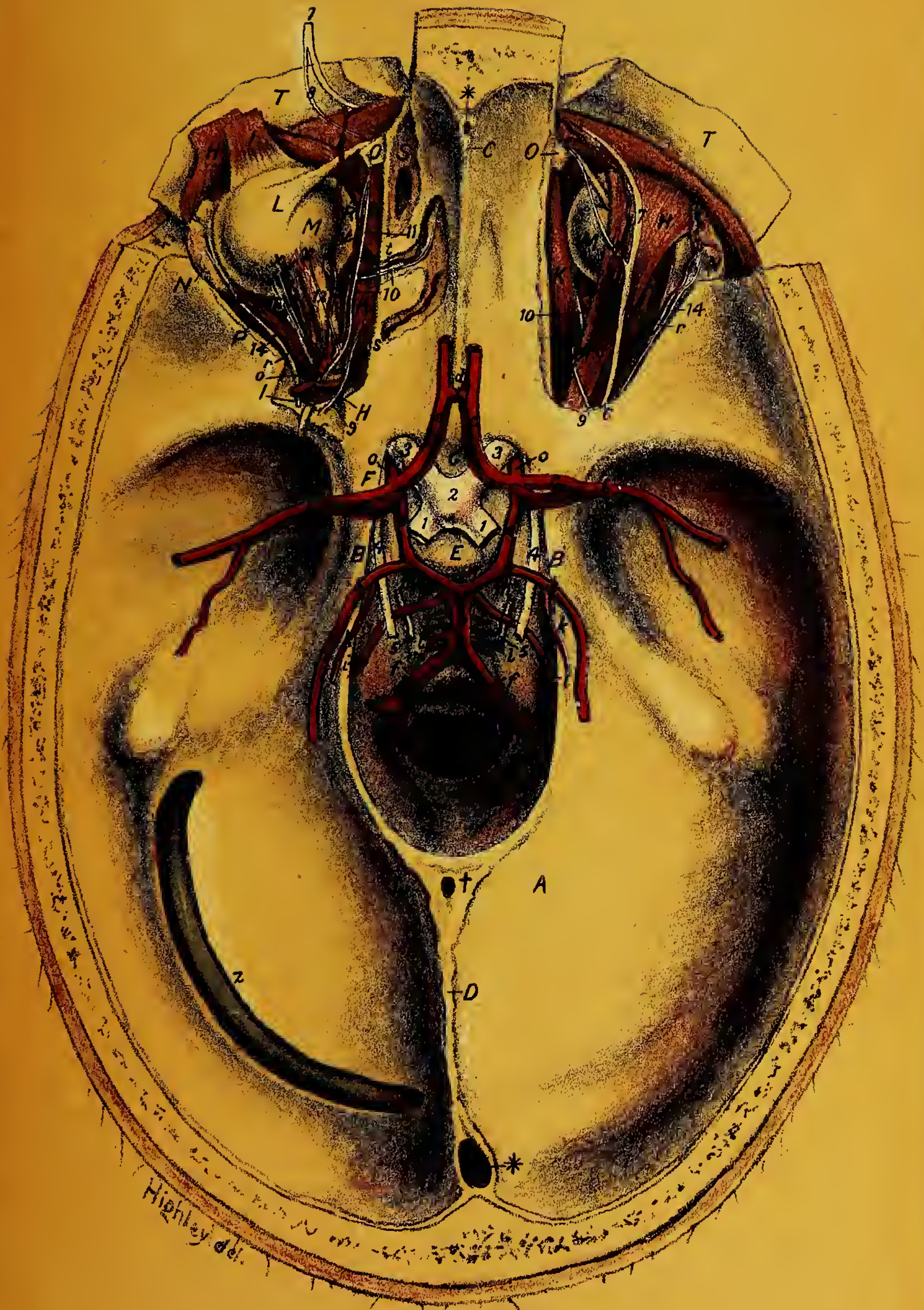
VESSELS

a Internal carotid.
b Middle cerebral.
c Anterior cerebral.
d Anterior communicating.
e Posterior communicating.
f Vertebral.
g Basilar.
h Posterior cerebral.
i Posterior superior cerebellar.
k Posterior choroid.
l Anterior cerebellar.
m Leash of arteries going to posterior perforated space.
n Inferior cerebellar.
o Ophthalmic.
p Supra-orbital.
r Lachrymal.
s Posterior ethmoidal.
t Anterior ethmoidal.
v Frontal.
x Long ciliary.
y Short ciliary.
z Lateral sinus.
* Superior longitudinal sinus.
† Inferior longitudinal sinus.

NERVES

1 Optic tract.
2 Optic commissure.
3 Optic nerve.
4 Third nerve.
5 Sixth nerve.
6 Frontal branch of ophthalmic division of fifth.
7 Supra-orbital.
8 Supra-trochlear.
9 Fourth nerve.
10 Nasal branch of the first division of fifth.
11 Infra-trochlear branch of the nasal.
12 Long ciliary branch of the nasal.
13 Ciliary branches from the lenticular ganglion.
14 Lachrymal nerve.

One of the small transverse branches coming off from the basilar usually accompanies the auditory nerve into its internal auditory meatus, and is called the auditory artery.



Dissected by C. G. Brodie

Hanhart imp.

PLATE XLIX. NATURAL SIZE.

INTERIOR OF SKULL WITH TENTORIUM REMOVED AND DEEP VIEW OF ORBITS, GASSERIAN GANGLION, AND PTERYGOID REGION FROM ABOVE.

This dissection is a deeper one on the same body as the preceding, only the tentorium has been completely removed and the lateral sinus opened up in the whole of its course. The dura mater of the middle fossa forming the roof of Meckel's space has been turned back to expose the Gasserian ganglion. On the right side the floor and side of the middle fossa has been cut away to expose the external pterygoid muscle from above with the course of the masseteric and deep temporal nerves.

The lateral sinuses, if examined, will be found to be unequal in size, the right being usually the larger; it generally receives the blood from the superior longitudinal sinus, *i.e.* the chief part of the blood from the surface of the brain, while the left and smaller usually receives the straight sinus, which again takes the blood from the central ganglia. In the early fœtal condition the lateral sinuses empty chiefly into the external jugular through the mastoid foramen, but as development proceeds this gradually lessens, the internal jugular becoming developed as the chief means of exit.

The **Emissary** veins are those which communicate through apertures in the skull both with the veins within and those without. The chief are:

1. Through the foramen cæcum between the superior longitudinal sinus and veins of the nose; this is often obliterated in adults.

2. Through the parietal foramen between the superior longitudinal sinus and vein of the scalp.

3. Through the occipital protuberance between the Torcular Herophili and the occipital vein.

4. Through the mastoid foramen between the lateral sinus and posterior external jugular.

5. Through the posterior condyloid between the lateral sinus and posterior vertebral vein.

6. Through the anterior condyloid between the occipital sinus and the deep veins of the neck.

7. Through foramen Vesalii or foramen ovale, between the cavernous sinus and the veins of the pterygoid plexus.

8. Through small veins around the carotid artery the cavernous plexus communicates with the internal jugular.

9. Although hardly an emissary vein, a communication exists between the ophthalmic vein and the angular, thus connecting the cavernous sinus with the facial vein.

10. A communication exists between the occipital sinus and the posterior spinal veins; this again is barely an emissary vein in the correct sense of the term.

11. A communication exists between the cavernous sinus and the veins outside the base of the skull through the foramen lacerum medium.

12. A pair of veins usually pass through the foramen spinosum to communicate between the meningeal veins and the veins of the exterior.

13. There is sometimes a vein passing through the foramen rotundum.

PLATE XLIX.

MUSCLES AND FASCIÆ

A	Cut edge of tentorium.
B	Cut edge of falx cerebri.
C	Falx cerebelli.
D	Dura mater bridging over the fifth nerve and entering into the roof of Meckel's cave.
E	Placed over the dorsum sellæ.
G	Anterior extremity of the falx cerebri attached to crista galli.
H	Superior oblique.
H′	Tendon of superior oblique.
I	Internal rectus.
K	Inferior rectus.
L	External rectus.
M	Superior rectus.
N	Levator palpebræ.
O	Lachrymal gland.
P	Inferior oblique.
R	Inner surface of the temporal muscle.
S	External pterygoid.
T	Top of the interarticular cartilage of the temporo-maxillary joint.
V	Top of condyle of the lower jaw.
W	Anterior clinoid process.
X	Placed by the foramen ovale.
Y	Placed by the foramen rotundum.
Z	The roof of the optic foramen turned inwards with the origins of the levator palpebræ and superior rectus.

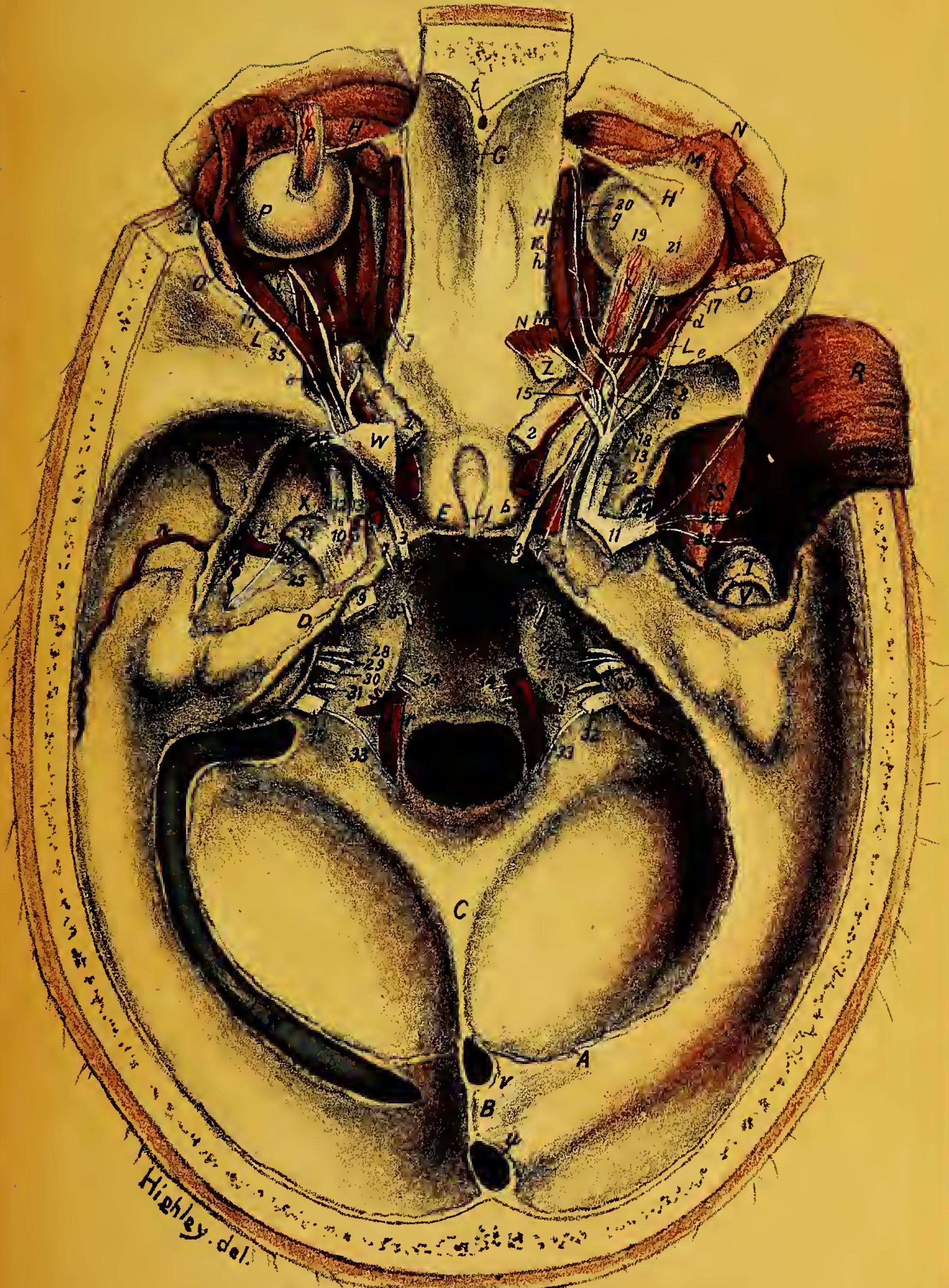
VESSELS

a	Internal carotid.
b	Internal carotid in cavernous sinus.
c	Ophthalmic artery.
d	Lachrymal artery.
e	Recurrent branch of lachrymal to middle fossa
f	Ciliary arteries.
g	Ophthalmic artery.
h	Anterior ethmoidal.
i	Infra-orbital branch of internal maxillary.
k	Deep temporal branch of internal maxillary.
l	Middle meningeal.
m	Its anterior division.
n	Its posterior division.
o	Its petrosal branch.
p	Ganglionic branch of internal carotid.
r	Vertebrals.
s	Posterior cerebellar.
t	Commencement of superior longitudinal sinus.
u	End of superior longitudinal sinus.
v	End of straight sinus.
w	Lateral sinus laid open.

NERVES

1	Infundibulum leading through dura mater to pituitary body.
2	Optic nerve.
3	Third nerve.
4	Upper division of third supplying levator palpebræ and superior rectus.
5	Nerve to the inferior oblique from inferior division of third nerve.
6	Branch of third to inferior rectus.
7	Fourth nerve.
8	Sixth nerve
9	Fifth nerve just before passing over the superior border of the petrosal bone.
10	Gasserian ganglion.
11	Third division of fifth.
12	Second division of fifth.
13	First or ophthalmic division of fifth.
14	Frontal and nasal branches of first division of fifth cut (left side).
15	Frontal branch of ophthalmic cut (right side).
16	Nasal branch of ophthalmic.
17	Lachrymal branch of ophthalmic.
18	Lenticular ganglion, entering the back of which is the ganglionic branch of the nasal.
19	Long ciliary branch of nasal.
20	Infra-trochlear branch of nasal.
21	Ciliary branches of the lenticular ganglion.
22	Deep temporal branches of third division of fifth.
23	Masseteric branch of same.
24	Pterygoid and buccal branches of same.
25	Great superficial petrosal.
26	Lesser superficial petrosal.
27	External petrosal.
28	Seventh or portio dura.
29	Pars intermedia.
30	Auditory or portio mollis.
31	Glosso-pharyngeal.
32	Vagus.
33	Spinal portion of spinal accessory.
34	Hypoglossal.
35	Infra-orbital from second division of fifth.

PL. XLIX.



Berjeau & Highley lith

Dissected by C G Brodie

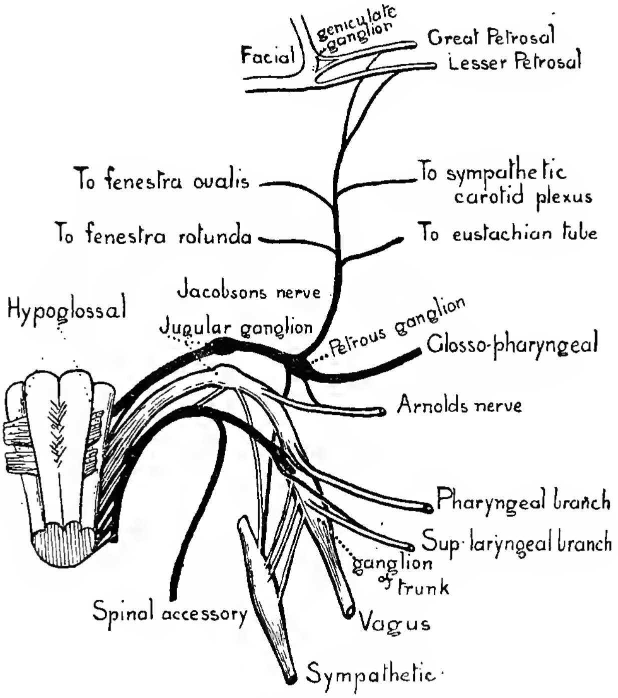
Hanhart imp

PLATE L. Natural Size.

THE PHARYNX FROM BEHIND.

In this dissection the anterior portion of the skull was detached from the posterior by means of two saw cuts, beginning behind the mastoid process and running parallel with the petrous portion of the temporal bone and passing through the posterior wall of the jugular foramen. The basilar process of the occipital bone was then broken through by a chisel cut and the anterior portion of the skull removed.

On the right side the various structures passing up to and from the base of the skull were left in their normal positions, while on the left the internal carotid, internal jugular vein and sympathetic nerves were cut away to show the structures in front of them. The vagus and spinal accessory were cut and hooked aside and the digastric partly cut away.



A diagram has been introduced here to show the connections of the nerves with each other and the sympathetic as they leave the skull, the hypoglossal having been omitted for the sake of clearness. The distribution of the nerve of Jacobson is also indicated in a diagrammatic manner.

PLATE L.

MUSCLES

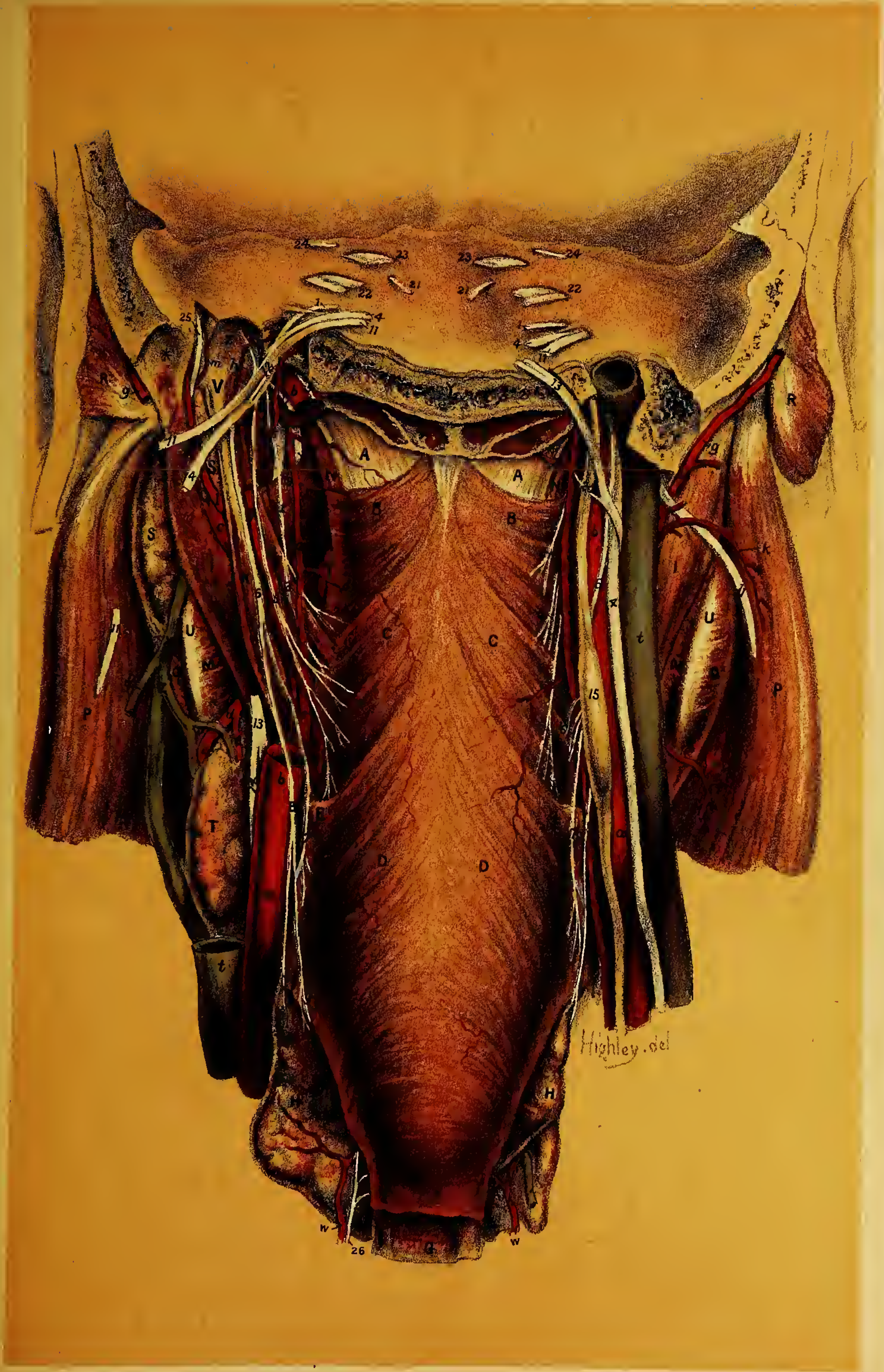
A Pharyngeal aponeurosis showing above the edge of the superior constrictor. This space is called the sinus of Morgagni.
B Superior constrictor.
C Middle constrictor.
D Inferior constrictor.
E Placed over the great cornua of the hyoid bone.
F Œsophagus.
G Trachea.
H Thyroid gland.
I Posterior belly of the digastric.
K Stylo-hyoid.
L Stylo-pharyngeus.
M Internal pterygoid.
N Levator palati.
O Masseter.
P Sterno-mastoid.
R Trachelo-mastoid and splenius turned back.
S Parotid gland.
T Submaxillary gland.
U Posterior edge of ramus of jaw.
V Base of styloid process.
W Rectus capitis anticus major.
X Rectus capitis anticus minor.
Y Basilar process of the occipital bone.
Z Jugular fossa.
* Digastric fossa.

VESSELS

a Common carotid.
b Internal carotid.
c External carotid.
d Facial.
e Submaxillary branch of facial.
f Superior thyroid.
g Occipital.
h Meningeal branch of the occipital ascending to pass through jugular foramen.
k Sterno-mastoid twig of occipital.
l Posterior auricular.
m Stylo-mastoid branch of posterior auricular.
n Ascending pharyngeal.
o Meningeal branch of the ascending pharyngeal passing through jugular foramen.
p Pharyngeal branches of ascending pharyngeal.
r Ascending palatine branch of facial.
s Sterno-mastoid branch of superior thyroid.
t Internal jugular vein.
v Internal maxillary artery.
w Inferior thyroid vessels.
x Temporo-maxillary vein.
y Posterior division of temporo-maxillary going to join external jugular.
z Anterior division joining with the
* Facial and emptying into the internal jugular.

NERVES

1 Glosso-pharyngeal.
2 Pharyngeal branches of glosso-pharyngeal.
3 Muscular twig to glosso-pharyngeus.
4 Pneumogastric.
5 Pharyngeal branches of vagus.
6 Superior laryngeal branch of vagus.
7 Internal laryngeal branch of vagus.
8 External laryngeal branch of vagus.
9 Pharyngeal twig from the external laryngeal.
10 Twigs to thyroid gland from external laryngeal.
11 Spinal accessory.
12 Accessory portion of spinal accessory joining the lower ganglion of vagus.
13 Hypoglossal.
14 Descendens noni (cervicis).
15 Superior cervical ganglion of sympathetic.
16 Pharyngeal branches from the sympathetic ganglion.
17 The ascending branches of the sympathetic splitting on the internal carotid to form the plexuses.
18 Lingual nerve.
19 Inferior dental.
20 Communication from first cervical to hypoglossal.
21 Sixth pair of nerves.
22 Seventh and eighth pair.
23 Fifth pair.
24 Fourth pair.
25 Facial nerve.
26 Recurrent laryngeal.



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Dissected by C.G. Browne

Hanhart imp.

PLATE LI. NATURAL SIZE.

THE PHARYNX OPENED SHOWING PALATE, POSTERIOR NARES, &c.

In this dissection the constrictor muscles were divided along the median raphe and the pharyngeal aponeurosis partly detached from its upper attachment; the mucous membrane was carefully removed from the soft palate and pharynx. On the left side the posterior layer of the palato-pharyngeus was partially turned back, while on the right it was completely removed. The right levator palati was also divided, and the pharyngeal aponeurosis removed from the border of the pterygoid process, in order to expose the tensor palati.

The position of the tensor and levator palati muscles should be carefully studied, as they have to be divided in operations for cleft palate, because they are concerned in drawing apart the edges of the cleft; thus causing tension on the stitches when the edges are sutured together.

The enervation of the levator palati has given rise to much discussion, but Horsley and Beevor have discovered that stimulation of the facial within the skull produces no effect on the palate, while as soon as the eleventh nerve was stimulated, that side of the soft palate was at once raised. The nerve supply probably reaches it through the pharyngeal plexus.

In the early fœtus the anterior pillar of the fauces is a sharp fold bounding a deep recess which was the lower part of the second post-oral cleft; the tonsil is a mass of adenoid tissue developed in the cleft, and above it there is often a fossa—the supra-tonsillar fossa which is a permanent remains of the cleft. The posterior pillars of the fauces are developed later, and divide this pouch into the supra-tonsillar fossa and the lateral recess of the pharynx.

PLATE LI.

MUSCLES

A Superior constrictor.
B Posterior fasciculus of the palato-pharyngeus.
C Anterior fasciculus of the palato-pharyngeus.
D Azygos uvulæ.
E Levator palati.
F Tensor palati.
G Aponeurosis of pharynx closing in sinus of Morgagni.
H Cartilage of Eustachian tube.
I Internal pterygoid plate.
J Posterior nares.
K Internal pterygoid muscle.
L External pterygoid muscle.
M Osseous part of the Eustachian canal.
N Placed over great cornua of hyoid bone.
O Placed over the superior cornua of thyroid cartilage.
P Placed on tongue below foramen cæcum.
R Epiglottis.
S Glosso-epiglottidean pouches.
T Œsophagus.

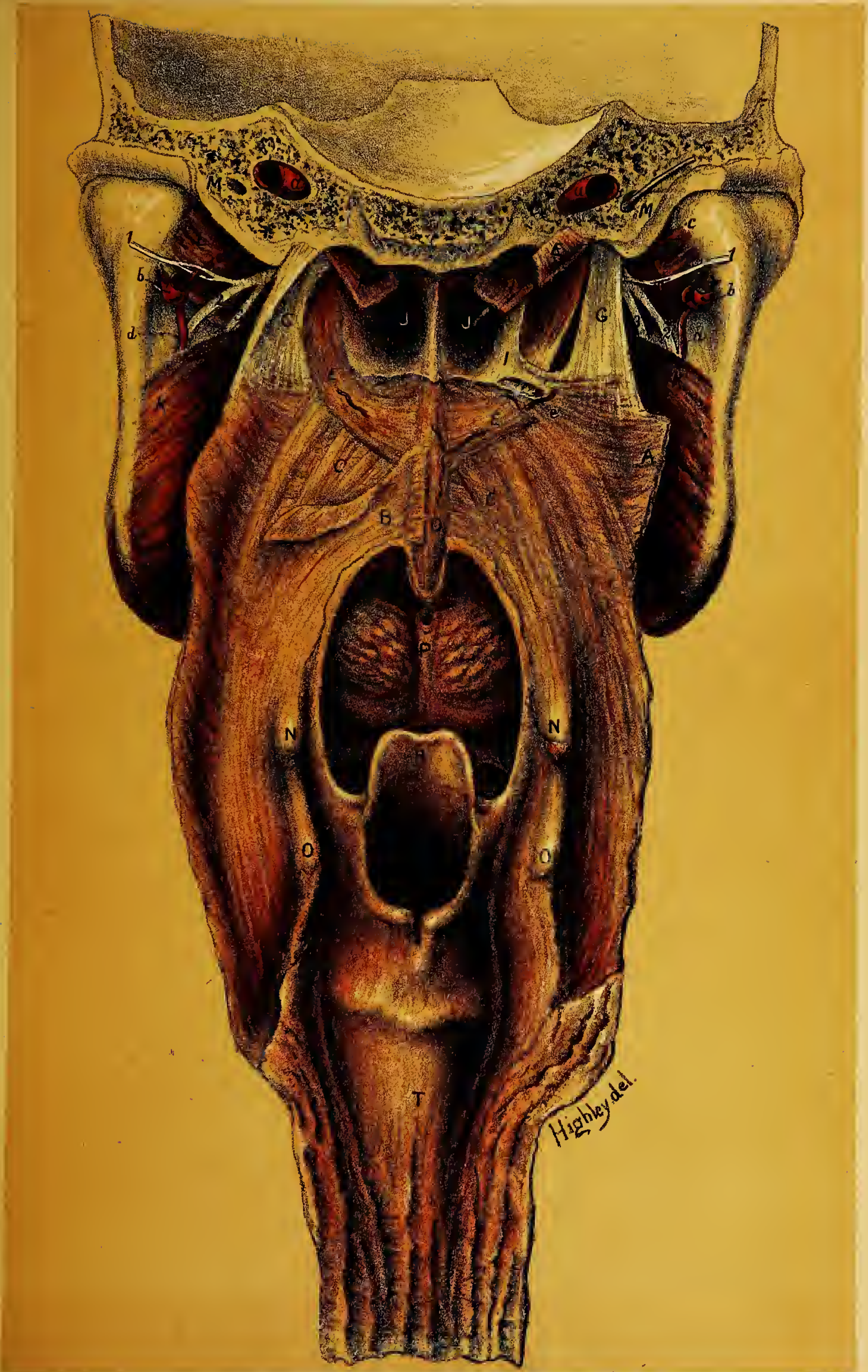
VESSELS

a Internal carotid.
b Internal maxillary.
c Middle meningeal.
d Inferior dental.
e Branch from the ascending palatine of facial.

NERVES

1 Auriculo-temporal.
2 Inferior dental.
3 Lingual.

A bristle has been passed through the right Eustachian canal.



[illegible] & Highley lith.

Dissected by C. G. Brodie

Hanhart imp

PLATE LII.

THE LARYNX. NATURAL SIZE.

In this plate are represented three dissections of the larynx. Fig. I. shows a posterior view with the mucous membrane removed, to show the nerves and muscles; Fig. II. a side view, with the posterior part of the right side of the thyroid removed; and Fig. III. a deeper view of the same, to show the deep portion of the thyro-arytenoid muscle and its connection with the true vocal cords.

Morphology of the Vocal Cords.[1]—Mr. Sutton has pointed out that the false vocal cords of man are connected in front with the inner surface of the thyroid cartilage, and also the base of the epiglottis; embedded in their substance are the cuneiform cartilages, and on tracing the false cords backwards to their attachment to the arytenoids, accessory slips will be found connecting them with the cornicula laryngis. In the porpoise there is an azygous epiglottis and an enormously prolonged cornicula laryngis which, though separate, are bound together by dense fibrous tissue. From the base of the epiglottis a process of cartilage projects which is joined by fibrous tissue with a style-like process of cartilage projecting from the cornicula laryngis; and in this fibrous tissue are nodules of cartilage. In the ant-eater there is a well-developed epiglottis, and directly continuous with its body is a process of cartilage which, passing backwards, becomes continuous with that overtopping the arytenoids; this body causes a projection in the mucous membrane and forms the false vocal cord. In the horse there is a thick bar of cartilage continuous with the base of the epiglottis projecting backwards into the false vocal cords.

Thus, in man the false vocal cords with the cuneiform cartilages are the degenerate representatives of the piece of cartilage by means of which the cornicula laryngis and the epiglottis were originally united, and, with the cornicula, must be regarded as vestigial structures.

The *True Cords* may be considered as the tendinous part of the thyro-arytenoid muscle, which is intimately connected with it.

The *Hyo-epiglottic Ligament.*—In the horse a muscle replaces this ligament, which has occasionally even in man been seen to be muscular. It attains its greatest development in those animals with an intra-narial epiglottis.

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[1] Bland Sutton, *Journal of Anat. and Phys.* vol. xxiii. p. 256.

PLATE LII.

Fig. I. MUSCLES, &c.

A Crico-arytenoideus posticus.
B Crossing bands of arytenoideus.
B′ Aryteno-epiglottideus really formed by the crossed bands of the arytenoideus passing over the arytenoids into aryteno-epiglottidean fold.
C Deeper transverse portion of the arytenoideus.
D Origin of the anterior muscular band of œsophagus.
E Upper border of cricoid cartilage.
F Crico-thyroid joint.
G Inferior cornua of thyroid.
H Superior cornua of thyroid.
I Cartilago-triticea.
K Cut edge of mucous membrane.
L Fibres of the palato-pharyngeus.
M Inferior constrictor.
N Lateral glosso-epiglottidean bands.
O Tonsils.
P Epiglottis.
R Placed on the root of tongue just below foramen cæcum.
S Thyro-hyoid membrane.
T Placed over the great cornua of the hyoid bone.
U Thyroid gland.
V Posterior portion of trachea.

Fig. II. MUSCLES

A Arytenoideus.
B Aryteno-epiglottideus.
C Arytenoideus posticus.
D Origin of the anterior muscular band of œsophagus.
E Crico-thyroideus.
F Arytenoideus lateralis.
G G′ Superficial fibres of the thyro-arytenoideus.
H Deep portion of the thyro-arytenoideus.
I Thyro-hyoid membrane.
J Right ala of thyroid cartilage.
K Great cornua of the hyoid bone.
L Superior cornua of the thyroid cartilage.
M Thyro-hyoid and sterno-hyoid muscles.
O Hyoglossus.
P Articular facet for thyroid on cricoid cartilage.
R Articular facet for cricoid on thyroid cartilage.
S Thyroid gland.
T Trachea.
V First ring of trachea.
Z Suspensory ligament of thyroid.

Fig. III. MUSCLES

A Thyroid cartilage.
B Cricoid cartilage.
C Crico-thyroid membrane.
D Articular facet for thyroid cartilage.
E Arytenoideus posticus.
F Arytenoideus lateralis.
G Deep portion of the thyro-arytenoideus.
H True vocal cords, a cut edge of the mucous membrane overlapping the right.
I False vocal cord.
K Arytenoid cartilage.
L Arytenoideus.
M Ventricle of the larynx.
N Placed over the processus vocalis.
O Median glosso-epiglottic fold.
P Epiglottis.

VESSELS

a Inferior thyroid artery.
b A laryngeal branch of inferior thyroid.
c Superior laryngeal.

NERVES

1 Recurrent laryngeal.
2 Branch to inferior constrictor.
3 Branch of communication with superior laryngeal.
4 Branch to arytenoideus.
5 Branch to arytenoideus lateralis and thyro-arytenoideus.
6 Branch to arytenoideus posticus.
7 Superior laryngeal.

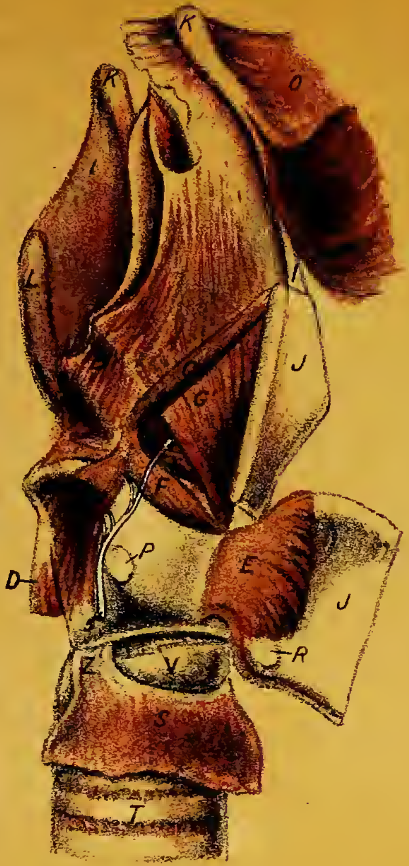


Fig II.

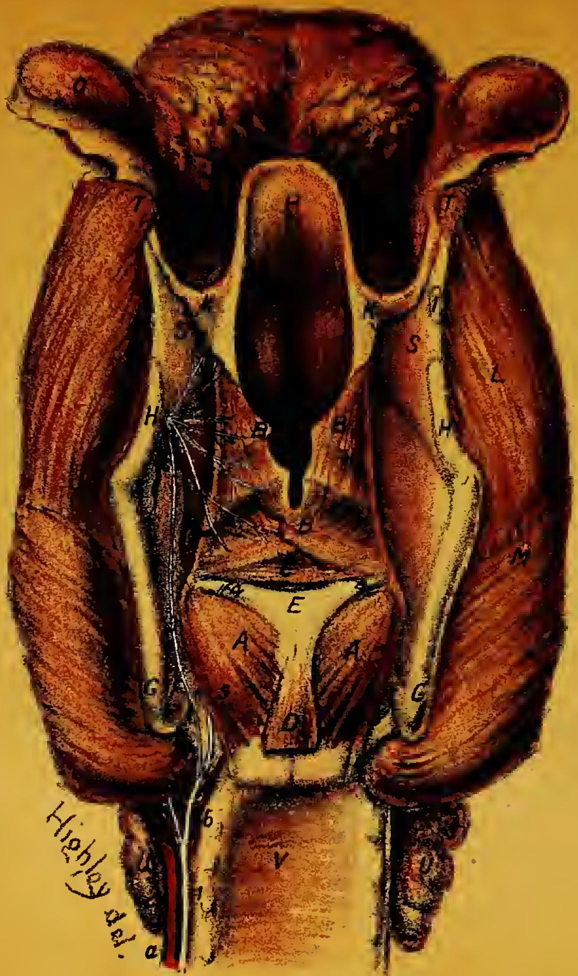


Fig 1.

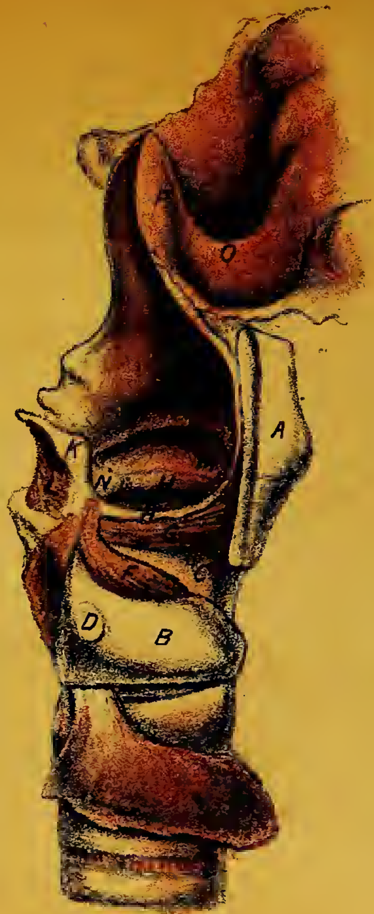


Fig III.

[illegible] [illegible] [illegible]

PLATE LIII.

MUSCLES, &c.

A Falx cerebri.
B Tentorium cerebelli.
C Falx cerebelli.
D Frontal sinus.
E Superior turbinal bone.
F Middle turbinal.
G Inferior turbinal.
H Hard palate.
I Lateral recess of pharynx.
J Opening of the Eustachian tube.
K Soft palate.
L Genio-hyo-glossus muscle.
M Sublingual gland.
N Genio-hyoid.
O Hyoid bone.
P Placed in pharynx opposite the tip of the epiglottis.
R Laryngeal surface of epiglottis.
S Placed on the arytenoid cartilage.
T Section of thyroid cartilage.
U Sphenoidal sinus.
V Basilar process of occipital.
X Bursa between odontoid process and atlas.

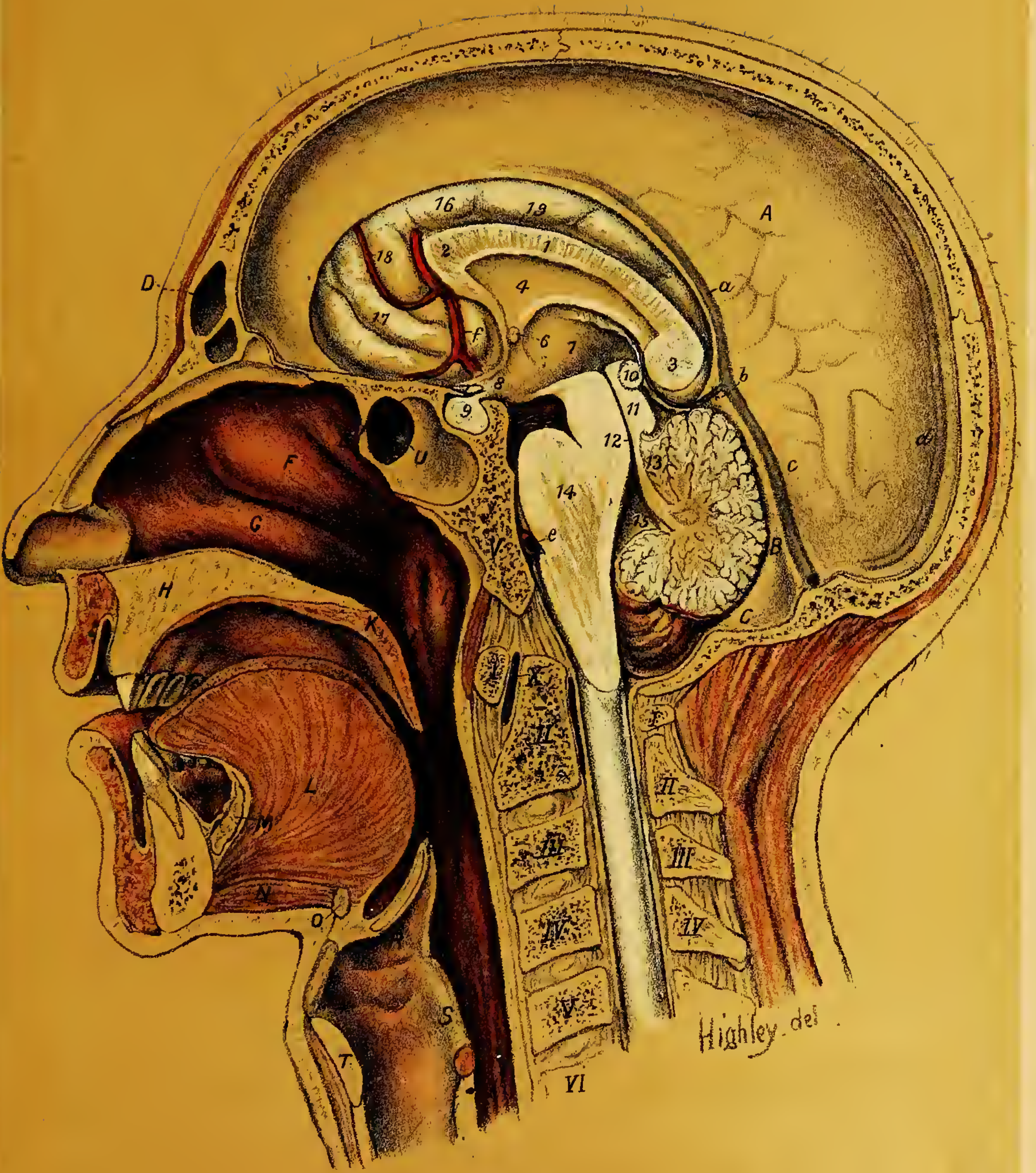
The vertebræ are numbered in Roman numerals.

VESSELS

a Inferior longitudinal sinus.
b Veins of Galen.
c Straight sinus.
d Superior longitudinal sinus.
e Vertebral artery just at its junction with the one on the opposite side to form the basilar.
f Anterior cerebral.

NERVES

1 Corpus callosum.
2 Genu of corpus callosum.
3 Splenial end of corpus callosum.
4 Septum lucidum.
6 Anterior commissure of the third ventricle.
7 Optic thalamus.
8 Infundibulum.
9 Pituitary body.
10 Pineal body.
11 Corpora quadrigemina.
12 Aqueduct of Sylvius.
13 Valve of Vieussens.
14 Pons.
15 Placed in the fourth ventricle.
16 Convolution of the corpus callosum (gyrus fornicatus).
17 Supra-marginal convolution.
18 Calloso-marginal fissure.
19 So-called *ventricle* of the corpus callosum.

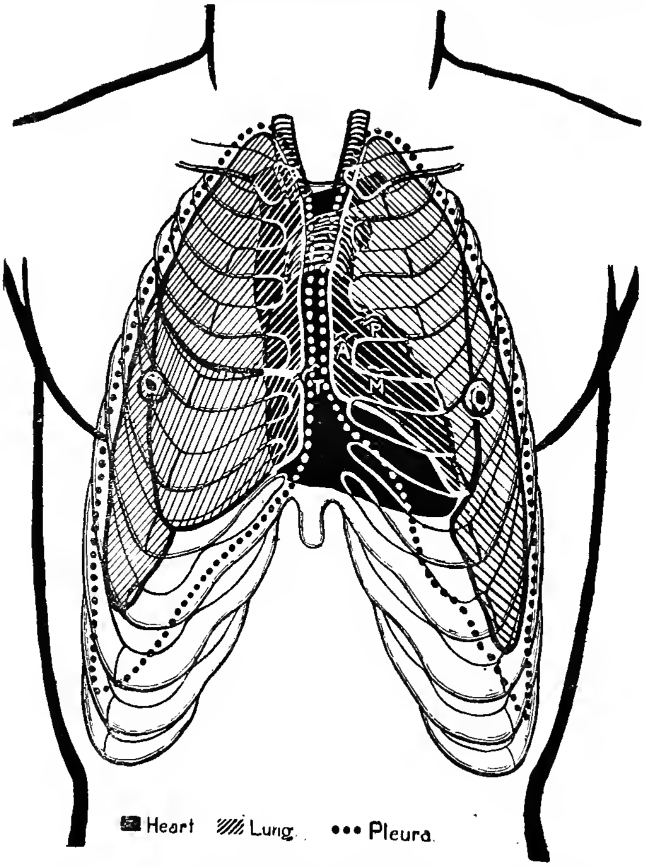


Berjeau & Highley lith. From a Dissection in the Middlesex Hospital. Hanhart

PLATE LIV.

FIRST ANTERIOR VIEW OF THE THORAX.

This plate shows the thorax, with the sternum, costal cartilages, and the anterior extremity of the ribs removed. Great care was taken not to open the pleural sacs and to preserve them in their normal position. The sternum and ribs were drawn first before removal, and the outline has been traced in white lines over the plate so as to show at a glance the relations of the various structures to the anterior wall of the thorax. The following diagram has been introduced to show the surface marking of the viscera.



Note on the Pleura.—Luschka states that the inner edge of the left pleura diverges normally from the sternum opposite the upper border of the fifth cartilage and at the level of the sternal end of the fifth rib is about half an inch from the edge of the sternum, while at the level of the sternal end of the seventh rib it has receded nearly one and a half inches from the edge of the sternum. St. John Brooks, on the other hand, after a careful investigation, has shown that this is not the case, but that both pleuræ descend under the cover of the sternum as far as the seventh costal cartilage, and thus in some cases of paracentesis of the pericardium the pleura may be perforated, though in others probably the distension of the pericardium has pushed away the pleura from its loose attachment to the anterior walls.

PLATE LIV.

MUSCLES

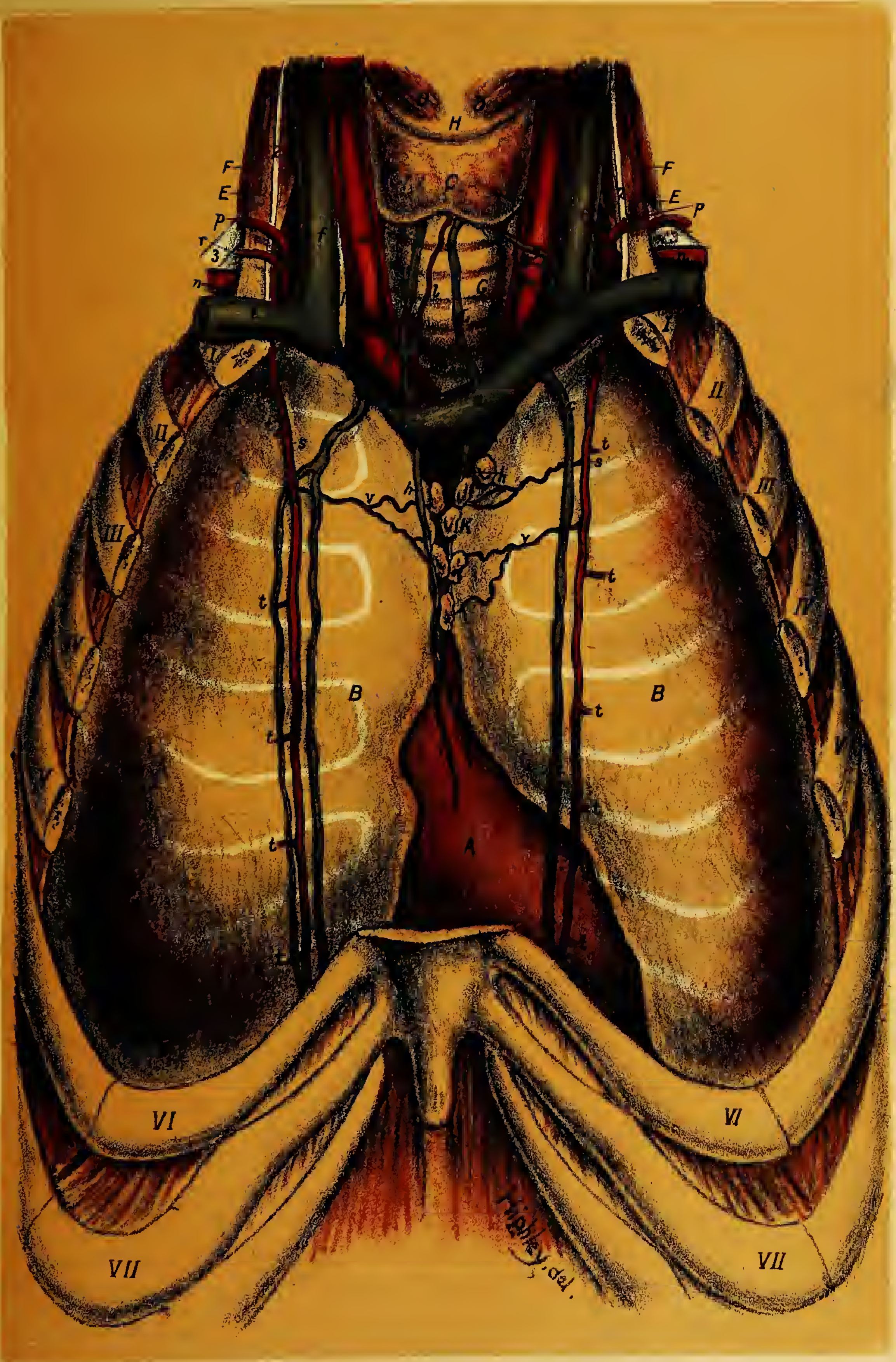
A Pericardium.
B Pleural sacs.
C Thyroid gland.
D Crico-thyroid muscles.
E Scalenus anticus.
F Scalenus medius.
G Trachea.
H Cricoid cartilage.
K Anterior mediastinal glands.

VESSELS

a Left innominate vein.
b Right innominate vein.
c Internal mammary veins.
d Inferior thyroid veins.
e Subclavian vein.
f Internal jugular.
g Middle thyroid vein.
h Mediastinal veins.
i Transverse aorta.
k Innominate artery.
l Arteria thyroidea ima.
m Common carotid arteries.
n Subclavian arteries.
o Inferior thyroid branches of subclavian
p Transverse cervical.
r Supra-scapular.
s Internal mammary.
t Anterior intercostal and perforating branches of internal mammary.
v Anterior mediastinal branches of internal mammary.

NERVES

1 Right pneumogastric.
2 Phrenics.
3 Cords of brachial plexus.



Berjeau & Highley lith

Dissected by C G Brodie

Hanhart imp

PLATE LV.

SECOND ANTERIOR VIEW OF THORAX.

In this plate the lungs have been drawn aside to uncover the pericardium; this has been opened to show the position of the heart and great vessels.

Aeby [1] opposes the idea that the bronchi divide dichotomously as they pass into the lungs, and states that each tube passes in as an axial stem in the lung substance, giving off branches in definite directions. These branches can be divided into primary, and secondary or accessory branches which are probably only subdivisions of the primary that have become implanted on the axial trunks. The primary branches are in two sets: those given off in front of the pulmonary artery—*eparterial*; and those given off behind—*hyparterial*, the latter arise from the outer surface of the stem bronchus and pass in two directions, some ventrally and some dorsally. The pulmonary artery as it passes backwards lies on the outer surface of the axial bronchus, between the two sets. Small and more irregular branches arise on the inner surface of the axial bronchus; these are the accessory bronchi. Thus the arrangement is more bipinnate than dichotomous.

If the human bronchi be examined it will be seen that the right one gives off a branch *above* [2] the place where the pulmonary artery crosses it, this is not represented on the left side, it is the eparterial bronchus: and thus Aeby supposes that the lobe of the lung to which it is distributed is also absent on the left side, and that the middle lobe of the right lung represents the whole of the upper lobe on the left; for all the rest of the bronchi come off *below* the crossing of the pulmonary artery, and hence are hyparterial. His has shown that in the development of the human lung, the right bronchus possesses at first only two buds which correspond to the eparterial and first ventral hyparterial bronchi; while the left bronchus has but one such bud, which corresponds to the first ventral hyparterial bronchus. The branching on the left side is more profuse than on the right, an especially strong dorsal branch being given off which runs upwards. This is unrepresented on the right side and compensates for the loss of the eparterial bronchus. In the sheep and ox the eparterial bronchus of the right upper lobe springs from the trachea, and this condition has been met with in the human subject. In some animals eparterial branches spring from both bronchi and supply corresponding lobes in the two lungs.

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[1] Aeby, *Der Bronchialbaum der Säugethiere und des Menschen.* Leipzig, 1887.

[2] In quadrupeds the term *in front of* the pulmonary artery corresponds to *above* in the human subject, and behind to below.

PLATE LV.

MUSCLES

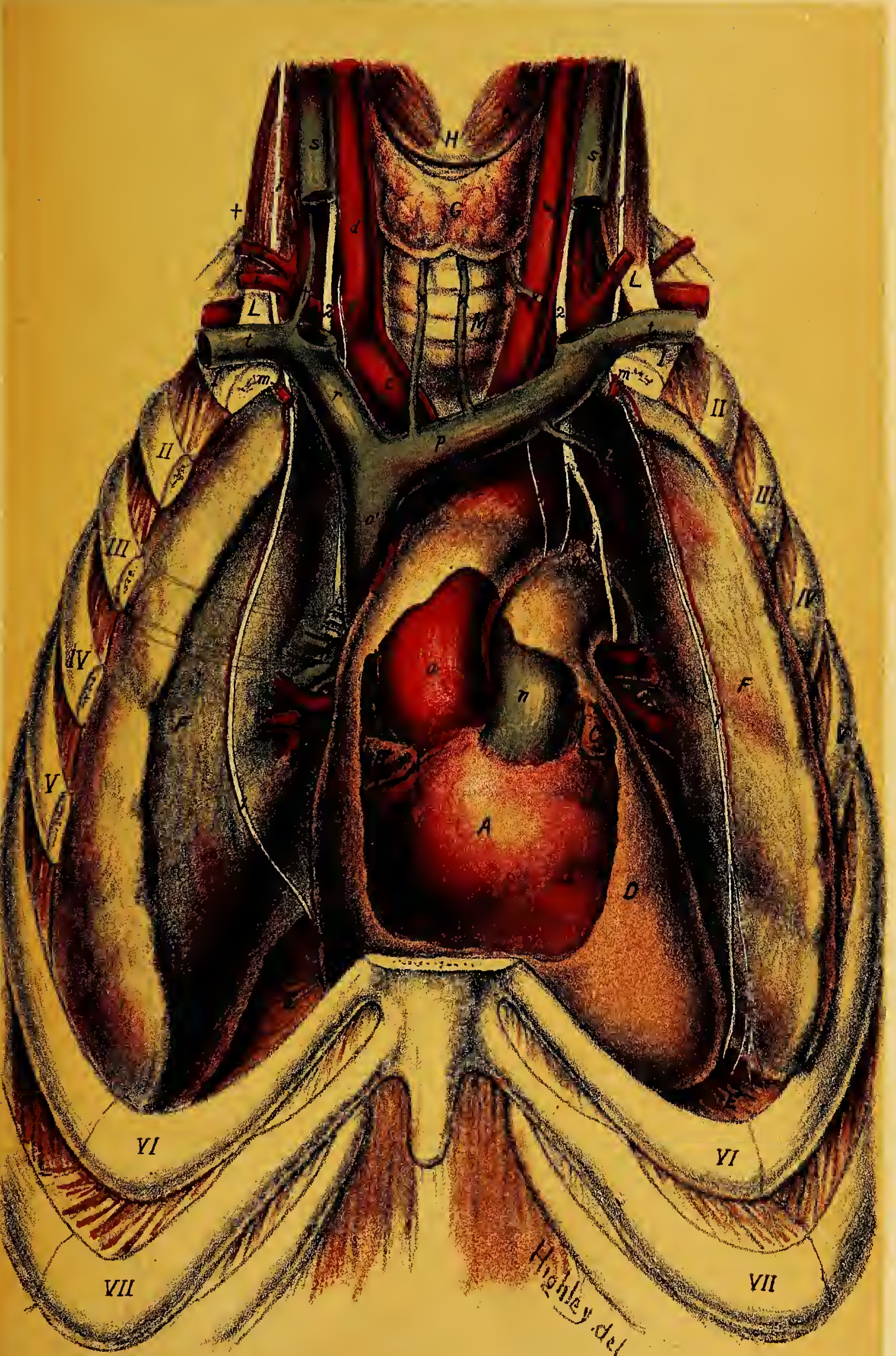
A	The heart.
B	Right auricular appendix.
C	Left auricular appendix.
D	Pericardium.
E	Diaphragm.
F	Internal surface of the pleura.
G	Thyroid gland.
H	Cricoid cartilage.
K	Crico-thyroid muscle.
L	Scalenus anticus.
M	Trachea.

VESSELS

a	Ascending part of aortic arch.
b	Transverse part of arch.
c	Innominate artery.
d	Right common carotid.
e	Right subclavian.
f	Left common carotid.
g	Left subclavian.
h	Thyroid axis.
i	Supra-scapular.
k	Transverse cervical.
l	Inferior thyroid.
m	Internal mammary.
n	Pulmonary artery.
n'	Ductus arteriosus.
o	Superior vena cava.
p	Left innominate vein.
r	Right innominate vein.
s	Internal jugular vein.
t	Subclavian veins.
v	Vertebral artery.
x	Inferior thyroid vein.
y	Middle thyroid vein.
z	Left superior intercostal vein.
*	Pulmonary vein.
†	Vertebral vein.

NERVES

1	Phrenic.
2	Vagus.
3	Left recurrent laryngeal.
4	Thoracic cardiac from vagus.
5	Inferior cervical cardiac of sympathetic of left side.
6	Right cervical cardiac of the sympathetic.



Berjeau & Highley lith.

Dissected by C. G. Brodie

PLATE LVI.

THE POSTERIOR VIEW OF THORAX.

In this dissection the whole of the vertebræ were removed, also the ribs as far as their angles. The body had not been dissected from the front of the thorax, so that everything is nearly in its normal position; save that, owing to the removal of the connecting vertebræ, the space has been elongated by the weight of the abdomen and head and neck dragging in opposite directions over the blocks on which the trunk was supported. The obliquity of the higher aortic intercostals is also well shown; these in the early fœtus come off at right angles to the aorta, and it is only after the first year of birth that the obliquity makes its appearance.

The posterior mediastinum includes that portion of the interpleural space behind the pericardium and below the level of the fourth dorsal vertebra. It is bounded

In front, by the pericardium;

Behind, by the bodies of the vertebræ; and

Above, by a plane passing through the joint of the manubrium and gladiolus sterni and the lower part of fourth dorsal vertebra.

Below, by the diaphragm.

Contents.—Descending part of aortic arch and thoracic aorta; origin of the aortic intercostals; azygos major, minor, and left upper azygos veins.
Œsophagus and thoracic duct.
Posterior mediastinal glands.
Vagi and plexus gulæ.

Professor Macalister limits the term 'aortic arch' to the transverse portion of the aorta as the ascending portion belongs to the ventral, and the descending portion to the dorsal or thoracic aorta.

PLATE LVI.

STRUCTURES

A Posterior portion of the parietal layer of pleura.
B Œsophagus.
C Trachea.
D Right bronchus.
E Left bronchus.
F Thoracic duct.
G Posterior wall of pericardium, the left pleura being slightly retracted in order to expose more of it.
H External intercostal muscles.
† Posterior mediastinal lymphatic glands.

Note.—The ribs on both sides are numbered in Roman figures.

VESSELS

a Placed on thoracic aorta.
b End of transverse portion of aortic arch (placed about the position of).
c Left subclavian artery.
d Superior intercostal branch of subclavian.
e Profunda cervicis, a branch of superior intercostal.
f Anastomosis between superior and first aortic intercostal.
g Aortic intercostals.
h Bronchial arteries which on both sides were given off from the superior intercostals.
i Azygos major vein.
k Azygos minor vein.
l Left upper azygos vein.
m Superior intercostal vein of right side.
n Superior intercostal vein of left side.
o Intercostal veins.

NERVES

1 First dorsal nerve.
2 Its intercostal branch.
3 Main trunk of sympathetic.
4 Communication between first dorsal and first dorsal ganglion.
5 Great splanchnic.
6 Roots of great splanchnic from the dorsal ganglia, commencing in this case at the sixth.
7 Right vagus passing down to gain œsophagus and break up into the plexus gulæ.

PL. LVI

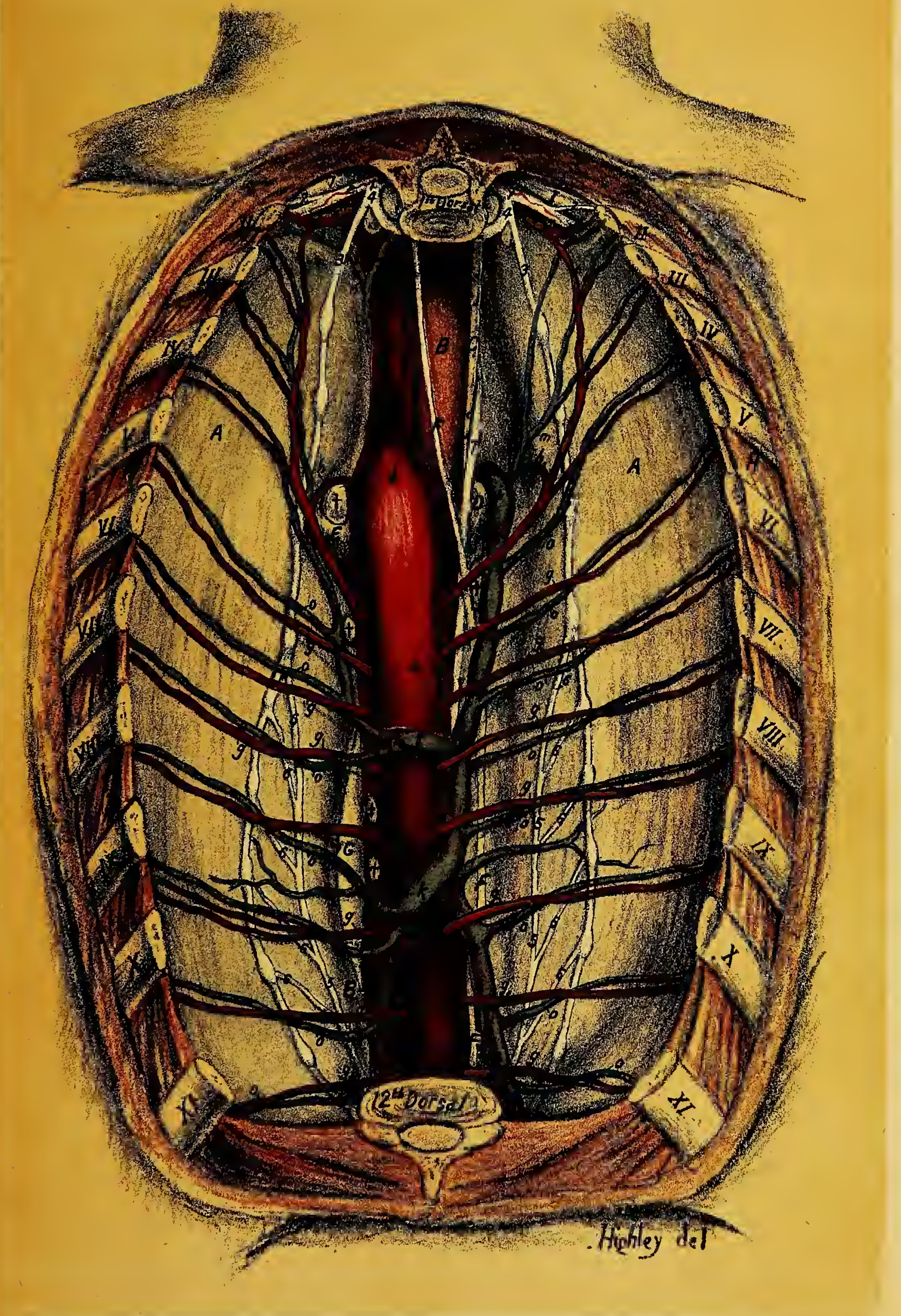


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PLATE LVII.

MUSCLES

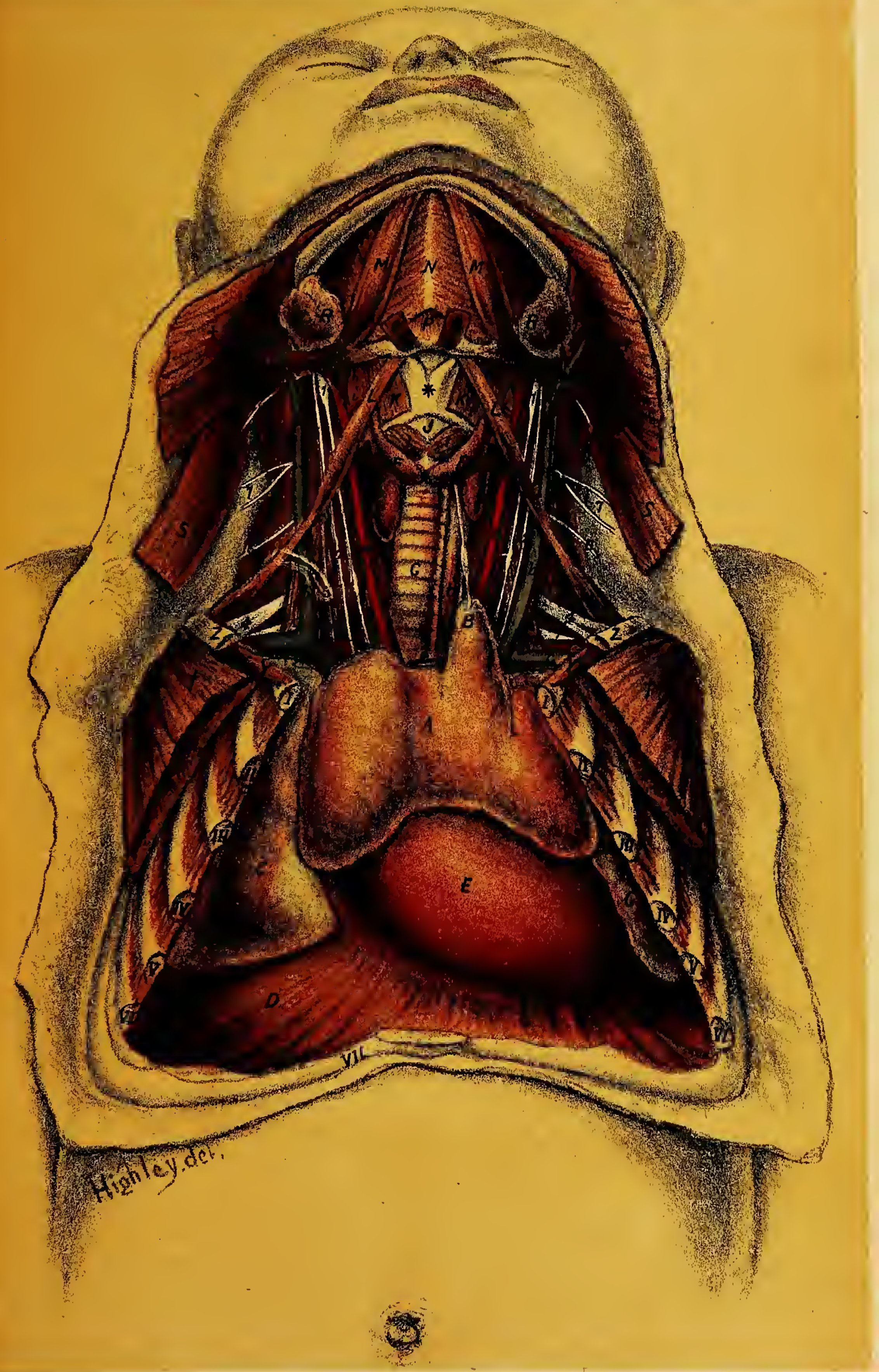
A Thymus gland.
B Ligament of thymus suspending it to lower border of the thyroid.
C Pleural sacs.
D Diaphragm.
E Pericardium.
F Thyroid gland.
G Trachea.
H Œsophagus.
I Crico-thyroid.
J Crico-thyroid membrane.
K Cut end of sterno-thyroid.
L Omo-hyoid.
M Digastric.
N Raphe between mylo-hyoid muscles.
O Sterno-hyoids.
P Genio-hyoid.
R Submaxillary glands.
S Sterno-mastoid.
T Trapezius.
U Levator anguli scapulæ.
V Scalenus medius.
X Scalenus anticus.
Y Subclavius.
Z Clavicle.
* Pomum Adami.
† Pectoralis major.
‡ Platysma.

VESSELS

a Common carotid arteries.
b Internal jugular veins.
c Subclavian veins.
d Right innominate.
e Left innominate.
f Subclavian artery.
g Facial vein.
h Lingual artery.
i Superior thyroid.

NERVES

1 Sympathetic. The number is placed on the first cervical ganglion.
2 Vagus.
3 Phrenic.
4 Cords of the brachial plexus.
5 Spinal accessory.
6 Descending branches of cervical plexus.
7 Great auricular and superficial cervical, from the second and third cervical.



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„ V.	The Inner View of the Arm and Brachial Artery.
„ VI.	The Front of Forearm (First View).
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„ VIII.	The Front of Forearm (Third View).
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